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ABSTRACT

This curriculum guide was designed for use in postsecondary ornamental horticulture education programs in Georgia. Its purpose is to provide for development of entry level skills in ornamental horticulture in the areas of knowledge, theoretical structure, tool usage, diagnostic ability, related supportive skills, and occupational survival skills. The first section of six explains the philosophies, purposes, and goals of vocational education in Georgia. Section 2 presents employability skills related to the occupational area of ornamental horticulture, specific occupational titles, student exit points, and tasks cross referenced to the Dictionary of Occupational Titles. Section 3, the largest part of the guide, provides unit guides for each task. (For each task, a task description, student performance objective, suggested instructional activities, instructional materials, evaluation section, and suggested instruction hours are included.) Section 4 contains the curriculum structure and course outline, while student record forms and competency certificates make up section 5. The last unit contains facility guidelines, with drawings, for group instruction and individualized instruction facilities. Appendixes to the guide contain references and resources, information on teaching special needs students, and definitions of terms. (XC)

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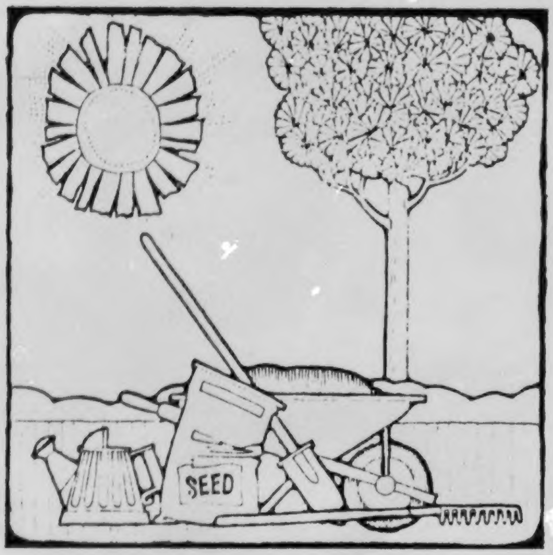
ORNAMENTAL HORTICULTURE

Post Secondary



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CURRICULUM GUIDE

Georgia Department of Education

ORNAMENTAL HORTICULTURE

Developed Under Contractual Agreement with

Division of Program Development
Office of Vocational Education
Georgia Department of Education
Atlanta, Georgia 30334
Charles McDaniel, State Superintendent of Schools
1981

ORNAMENTAL HORTICULTURE

Developed By

The University of Georgia

Under the Direction of

Dr. Paul Scott

Vocational Education Materials Center

Division of Vocational Education

College of Education

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POLICIES AND PROCEDURES FOR THE CENTER

PURPOSE OF THE CENTER

The Vocational Education Materials Center functions within the division of Vocational Education, University of Georgia. This Center operates under grants from the U.S. Office of Education, and the Georgia State Department of Education with the support of the College of Education. The Center is comprehensive in its commitment and approach to the development and dissemination of materials in the broad field of Vocational Education.

The purpose of the Center is to increase the capability of Georgia's delivery system for Vocational Education. Specifically, the Center is committed to:

1. Develop materials to assist in the implementation of proposed curricula and to enhance the teaching Vocational Education.
2. Conduct and report curriculum research related to Vocational Education.
3. Provide a production and dissemination center to Vocational Education materials.
4. Provide direct experiences in curriculum development and diffusion for advanced graduate stduents.
5. Enable faculty members to participate in the development and implementation of a variety of curriculum materials.

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ORNAMENTAL HORTICULTURE TABLE OF CONTENTS

SECTION I: PHILOSOPHY, PURPOSE AND OBJECTIVES (Pink)........I-1
State...I-5
Local...I-7
SECTION II: PROGRAM DESCRIPTION AND RELATED INFORMATION INFORMATION (Blue)..........................II-1
Employability Skills..................................II-5
Description of Occupational Field.....................II-7
Ornamental Horticulture Program Objective.............II-10
Definition of D.O.T. Code.............................II-11
Description of Occupational Exit Points...............II-12
Task Listing by D.O.T. Code...........................II-15
SECTION III: UNIT GUIDES (Gold).......................III-1
Unit Guide Description................................III-5
Ornamental Horticulture Task Index....................III-8
Unit Guides...III-11
SECTION IV: CURRICULUM STRUCTURE AND COURSE OUTLINE (Green).........................IV-1
Introduction to the Curriculum Structure..............IV-5
Ornamental Horticulture Curriculum Structure..........IV-6
Introduction to Ornamental Horticulture Exit Points...IV-9
Introduction to the Course Outline....................IV-12
Medical Laboratory Technician Course Outline..........IV-9
SECTION V: STUDENT RECORDS (Yellow)...................V-1
Records Management....................................V-5
Instructions..V-6
Competency Checklist..................................V-7
Certificates of Competency............................V-29
Group Progress Report.................................V-15

SECTION VI: FACILITIES (Pink)....VI-1

Group Instruction Facilities....VI-7

Individualized Instruction Facilities....VI-9

APPENDIX A: RESOURCES (Blue)....A-1

Instructional Resource Matrix....A-4

Unit Guide References....A-19

Additional Instructional Materials....A-24

Resource Addresses....A-29

APPENDIX B: SPECIAL NEEDS (Green)....B-1

APPENDIX C: DEFINITION OF TERMS (Yellow)....C-1

8

PURPOSE AND UTILIZATION OF THE CURRICULUM GUIDES

The purpose of this curriculum guide is to provide a suggested model for organizing vocational instructional content. In many cases, more material is available than may be needed, there fore, an instructor will need to adapt the content to meet his/her program needs.

While the guide is primarily oriented towards the classroom, whether as a primary resource or as a supplement to other teaching materials; it may also assist administrators, counselors and lay people involved in local school systems. The following outline provides an overview of the various ways these groups may utilize the curriculum guides.

a) Vocational teachers.

1. Provide a guide for organizing their program of instruction,
2. Assist in establishing program objectives,
3. Serve as a curriculum materials resource guide,
4. Improve communications with employers and advisory committees
5. Facilitate competency based instruction,
6. Facilitate either group or self-paced instruction,
7. Include content by quarter and semester,
8. Cross-reference with existing state developed instructional materials (PLACE packages and post secondary I.I.).

b) Vocational supervisors and administrators.

1. Assist in defining the scope and content of their programs,
2. Provide a means to improve curriculum management functions,
3. Serve as a guide for admissions and job placement functions,
4. Improve communications with employers and advisory committees.

c) Counseling and guidance staff.

1. Provide a data base for counseling and guidance personnel,
2. Identify student exit points (Career Options),
3. Serve as guide for admissions and job placement,

4. Correlate with new State Board of Education graduation requirements,
5. Provide specific content sequencing by quarter and semester for student scheduling,
6. Provide (a) curriculum options for the disadvantaged handicapped student, (b) curriculum modifications for SPECIAL NEEDS students, (c) typical admission requirements for regular and SPECIAL NEEDS students.

(d) Local Curriculum Coordination Committees.

1. Serve as a guide in working out articulation arrangements,
2. Improve definitions of the relationship between secondary clusters and post secondary specialized programs.

Vocational teachers, supervisors and administrators, counseling and guidance staff and local curriculum coordination committees will be primary users of this guide, however, the use of the guide is not limited to these groups, but by any and all groups directly related in designing a vocational curriculum.

-Foreword-

It has been the privilege of the Division of Vocational Education, University of Georgia, to participate in the development of 48 curriculum guides for Georgia vocational education programs. This work was sponsored by the Division of Program Development, Office of Vocational Education, State Department of Education. The completion of these guides meets a long standing need to provide a comprehensive curriculum overview of the vocational education programs available in Georgia schools. This developmental activity involved one of the largest professional staffs ever assembled for such work. Numerous teachers, teacher educators and state staff members have either written parts of the guides or served on the field review teams. These professionals were supported by a myriad of technical people and a host of typists who literally worked from dawn to dusk to ensure that the guides were produced in a timely fashion.

Be assured that this guide is not intended to be your curriculum or the curriculum of any school. The purpose of this project staff, and I am sure of the state OVE staff, is to offer a guide with supporting resources and teaching ideas from which the vocational instructor can extract a curriculum that meets local needs. The guide, however, does simplify curriculum decisions concerning sequencing and the selection of resources and media support.

The Task Linkage Project and appropriate V'TECS catalogs were used as the beginning point for this guide and all of the others. To assure that these task listings were directly related to Georgia vocational education programs and industry, they were subjected to additional study and review by appropriate teachers.

At some point in the future, this guide will need to be revised. To ensure that such a revision truly reflects the needs of Georgia's vocational education programs, the developers need your reactions, comments and ideas. We will also be interested in how you use this guide. Let us hear from you.

Paul Scott
Curriculum Guide Projects I & II

SECTION I

PHILOSOPHY, PURPOSE & OBJECTIVES

SECTION I

Section I Content List

State Philosophy and Goals
Local Philosophy and Goals

Section I provides an overview of the philosophies, purposes and goals for vocational education in the State of Georgia. These are applied to vocational education at the secondary level, however, it is recognized that more specific philosophies, purposes and goals will be applicable depending on the character of the local program.

VOCATIONAL EDUCATION IN GEORGIA

A. PHILOSOPHY

The Georgia Board of Education perceives vocational education as a vital component in the education of the young and adult citizens of this State. Appropriate programs of vocational education and ancillary services should be made readily available to individuals in middle schools, vocational divisions of junior colleges, vocational centers, the Quick Start program and other adult programs designed to train or retrain workers for useful and satisfying employment.

Special services and assistance must be provided to those who need it in order to participate or benefit from vocational education. This includes women, minorities, the displaced homemaker and other displaced workers, those with limited English-speaking ability, the disadvantaged and the handicapped.

Since men and women spend the greater part of their lives at some form of work, the State should provide opportunities for all its citizens to develop the knowledge, skills and attitudes necessary for them to secure personally satisfying and socially useful employment.

B. PURPOSE

The purpose of vocational education shall be to improve the economic well-being of Georgia citizens by preparing individuals, through organized learning experiences, to select, obtain and advance in recognized occupations.

14

POSTSECONDARY VOCATIONAL EDUCATION

A. PURPOSE

The purpose of postsecondary vocational-technical education in Georgia is to improve the economic well-being of adult citizens by providing access to high quality vocational-technical training for skilled and semi-skilled occupations, for improvement of existing skills or for retraining in a new occupation.

B. OBJECTIVES

1. To provide vocational-technical education programs and ancillary services commensurate with the needs and interests of students and available job opportunities.

2. To provide vocational-technical education programs which are current with the state-of-the-art, competency-based, and offer multiple exit points to accommodate the students' occupational objectives.

3. To provide vocational-technical education programs which are articulated with available high school counterparts, to facilitate an easy transition from secondary to postsecondary levels without loss of credit.

4. To provide vocational-technical education programs such that 75% of those individuals who leave or complete a program of occupational preparation will find employment in the field, or a related field, for which trained.

5. To provide those guidance, counseling, financial aid, evaluative, job placement, remedial and other supportive programs and services needed by students to enroll, complete a program and become, or remain, employable in a skilled or semi-skilled occupation.

6. To provide needed assistance to special populations to include women, minorities, limited English-speaking, the displaced homemaker and other displaced workers, the disadvantaged and the handicapped.

7. To provide vocational-technical education programs for full-time and part-time students on campus during the day as well as the evening hours, and to provide appropriate programs for full-time and part-time students off campus in businesses and industries, comprehensive high schools and other locations within the respective schools' service areas.

8. To serve as a center for the delivery of postsecondary and adult vocational-technical education programs and services for the community and assigned service area.

STATEMENT OF LOCAL SYSTEM PHILOSOPHY, PURPOSE AND OBJECTIVES FOR VOCATIONAL EDUCATION

(This page is intentionally left blank so that local systems may insert their copy of philosophy, purpose and goals for vocational education.)

SECTION II

PROGRAM DESCRIPTION & RELATED INFORMATION

SECTION II

Section II Content List

Employability Skills
Ornamental Horticulture Occupational Description
Ornamental Horticulture Program Objective
Definition of the D.O.T. Code
Description of Ornamental Horticulture D.O.T.
Task Listing by D.O.T. Code

The major goal of vocational education in Georgia is to prepare individuals, through organized learning experiences, to select, obtain and advance in recognized occupations. Section II provides an overview of employability skills that are desirable in any occupation and relates their significance to the specific occupational area of Ornamental Horticulture.

The Ornamental Horticulture Program Objective contains the specific occupational titles. These occupational titles are further explained in the description of the occupational exit points and task listing. The concentration of the program is based on these tasks.

EMPLOYABILITY SKILLS

Employability skills exert a great deal of influence on a person's ability to get and keep a job. Surveys indicate that more people lose their jobs because of poor attitudes toward their job than for lack of job skills. For this reason it is important that information concerning the following employability skills be provided as an ongoing part of the program.

1. Getting a job
    a. Filling out job applications
    b. Developing a resume
    c. Preparing for a job interview

2. Keeping a job
    a. Be on time and regular in attendance
    b. Maintain a fair share of the work-load
    c. Work without supervision
    d. Meet production schedules
    e. Properly care for and use equipment
    f. Dress appropriately for the job
    g. Maintain good personal hygiene
    h. Develop and maintain good communication with supervisors and co-workers

A recent study sponsored by the Illinois Department of Adult, Vocational and Technical Education and conducted by the University of Illinois, "Survival Skills: Mastering the Human Aspects of Work", has identified twelve topics that might be developed into instructional modules for teaching occupational survival skills. The author, Robert E. Nelson, outlines these topics listed below and on the next page, each followed by a general objective which indicates the relationship between the topic and the survival skills required to maintain a job.

*"1. Working in an Organization: To familiarize students with the reasons for the formation of organizations and the common characteristics of organizations.
2. Understanding Self and Others: To have students develop insights into causes of human behavior and learn to interpret their own behavior and the behavior of other.

3. Motivation for Work: To have students develop and understanding of motivations into the work they perform.
4. Interpersonal Relations: To have students develop concepts and skills in interpersonal relations and apply them to work situations.
5. On-the-Job Communication: To have students understand the importance of effective communication and learn ways of communicating effectively on the job.
6. Using Creativity on the Job: To make students aware of their creative potential and to practice using their creative ability in hypothetical on-the-job situations.
7. Authority and Responsibility: To have students develop an understanding of the concepts of authority, power, influence, and responsibility as they apply to work situations.
8. Problem Solving: To have students develop skill in applying problem solving to their work.
9. Coping with Organizational Change: To make students aware of the process of organizational change and the techniques for coping with organizational change.
10. Coping with Organizational Conflict: To make students aware of the sources and types of conflicts encountered on the job and recognize ways of coping with conflicts in an organization.
11. Leadership: To have students recognize the need for leadership in work groups and increase their understanding of the leadership role in work situations.
12. Adapting and Planning for the Future: To have students develop perspectives of work in the future and the ability to plan for anticipated changes in their work roles."

*Abstracted from the article, "Survival Skills: Mastering the Human Aspects of Work," by Robert E. Nelson, American Vocational Journal, November 1977.

DESCRIPTION OF OCCUPATION*

Ornamental Horticulture may have a satisfying and rewarding position for those who have the interests and can develop the abilities needed.

People who have been successfully employed in Ornamental Horticulture have an interest in plants, enjoy outdoor work, and like people. They also are honest and have an even disposition, are willing to work (at times--hard), and are willing to assume some responsibility. The ability to use imagination and to take the initiative in getting things done usually results in advancement in position. There are rewarding positions for those with sales ability. Those with a well-developed artistic sense may find landscape-nursery work especially interesting and satisfying.

Nursery workers work under the supervision of a nursery foreman (Horticultural Worker I) and need to know plant material and the cultural techniques required. They need to know how to operate the special equipment used in the nursery business. They must be able to work effectively with a group of people and be interested in some "on-the-job training."

Some nursery workers have not finished high school, while many are high school students gaining work experience, and some have training in ornamental horticulture.

Temporary, unskilled workers are often hired at times of peak work loads, such as fall digging of deciduous stock to be stored over winter.

Greenskeepers perform many tasks to maintain the grounds and turf of a golf course. Greenskeepers operate mowers, aerifiers, vertical mowers, and other power equipment. They apply lime, fertilizer, and pesticides at rates prescribed by the superintendent. The greenskeeper cleans and grades sand traps, changes putting cups and tee markers, topdresses, poles, and syringes greens. He/she also may prune and spray trees and shrubs, service equipment, and maintain buildings and other structures.

Experience can be gained by working at a golf course during the summer months. It is desirable to take courses emphasizing turf management. After 3 to 5 years of part-time experience plus training in technical turf courses, a greenskeeper may qualify for the position of assistant superintendent. The need for greensworkers is seasonal. Working hours will be irregular since some work must be done in early morning, late evening, or at night. The job of greenskeeper is the starting point for advancement to the position of assistant superintendent or superintendent.

Groundskeepers are usually employed to maintain the grounds of industrial, commercial, institutional properties and parks. They perform a number of tasks, including (1) mowing and trimming the lawn, (2) fertilizing turf and shrubs, (3) spraying turf and trees with insecticides, (4) watering turf and shrubs during dry periods, (5) clearing snow in winter, and (6) doing minor repair work on fences, gates, and buildings.

The work requires a knowledge of plants and how they grow; the use of fertilizers and pesticides; and the maintenance of the equipment used on the job.

While in school, part-time work as a service worker in grounds maintenance is a good way to gain experience.

Advancement will depend upon the employee's knowledge of his/her work and his/her willingness to accept responsibility. The work may be seasonal, except where the property is large.

Landscape gardeners may work for a landscape contractor, or they may be self-employed. Most of the work is outdoors during the spring, summer, and fall months. Working as a landscape gardener primariliy involves the actual work of establishing and maintaining the landscapes around properties. Preparing a seedbed, applying fertilizer, and seeding turf areas are examples of the work involved in establishing turf areas. Applying fertilizer, mowing grass, and pruning shrubs are examples of the work in maintaining turf areas. With experience and initiative, a person may become the supervisor of a crew of workers.

A high-school or postsecondary education with courses in ornamental horticulture is desirable for a landscape gardener. A knowledge of plants, soils, fertilizers, and pesticides is important. Mechanical skills are needed to operate and maintain the equipment used on the job.

The Horticultural Worker I may be employed in a nursery or a greenhouse operation. This person must have technical knowledge and training in propagation, planting, fertilizers and method of application, controlling plant diseases and controlling the plant environment inside and outside the greenhouse. He/she may supervise other horticulture workers in ornamental plant practices. The training for this position may be obtained through several years of on-the-job training or with one or two years in a postsecondary horticulture program.

*Occupational Outlooks Handbook, 1980-81 ed.

ORNAMENTAL HORTICULTURE PROGRAM OBJECTIVE

Given appropriate instruction, as suggested by this guide, a student completing the program should demonstrate entry level skills of Ornamental Horticulture in the areas of knowledge, theoretical structure, tool usage, diagnostic ability, related supportive skills and occupational survival skills.

As the student progresses through the program, sufficient competencies will be acquired to enable the student to enter the occupational field at the following D.O.T. Codes.*

Landscape Gardener	(D.O.T. Code 408.161-010)
Horticultural Worker II	(D.O.T. Code 405.687-014)
Groundskeeper, Industrial-Commercial	(D.O.T. Code 406.684-014)
Greenskeeper II	(D.O.T. Code 406.683-010)
Groundskeeper, Parks and Grounds	(D.O.T. Code 406.687-010)
Lawn Service Worker	(D.O.T. Code 408.684-010)
Laborer, Landscape	(D.O.T. Code 408.687-014)

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*Dictionary of Occupational Titles

DEFINITION OF D.O.T. CODE*

As a result of technological, economic and sociological influences, nearly every job in the economy is performed slightly differently from any other job. Every job is also similar to a number of other jobs. In order to look at the millions of jobs in an organized way, job titles are designated a 9-digit occupational code. Each set of three digits in the D.O.T. Code has a specific purpose or meaning that differentiates it from all other codes.

The first three digits of the D.O.T. Code identify a particular occupational group. In the code 652.382-010, the first digit indicates an occupational category. The second digit refers to a division within the occupational category. The third digit defines a specific occupational group within a division.

The middle three digits of the D.O.T. Code 652.382-010 are the worker function rating of the tasks performed in the occupation. Every job requires a worker to function, to some degree, in relation to data, people and things. A separate digit expresses the worker's relationship to each of these three groups. Worker functions involving more complex responsibility and judgment are assigned lower numbers while functions which are less complicated have high numbers.

The last three digits of the D.O.T. Code 652.382-010 indicate the alphabetical order of titles within 6-digit code groups. They serve to differentiate a particular occupation from all others. A number of occupations may have the same first six digits, but no two D.O.T. Code can have the same nine digits.

***Dictionary of Occupational Titles*, 1977 ed.*

DESCRIPTION OF OCCUPATIONAL EXIT POINTS*

408.687-014 LABORER, LANDSCAPE (agric.)

Moves soil, equipment, and materials, digs holes, and performs related duties to assist LANDSCAPE GARDENER (agric.) in landscaping grounds: Digs holes and trenches with pick and shovel. Plants and waters sod and shrubbery. Mixes and pours cement for garden borders and mows lawns. Places stone and plants flowers in garden areas. Hauls topsoil in wheelbarrow and spreads and levels soil, using rake.

408.684-010 LAWN-SERVICE WORKER (agric.)

Cultivates lawns, using power aerator and thatcher and chemicals according to specifications: Lifts dead leaves and grass from between growing grass and soil, using thatcher. Pierces soil to make holes for fertilizer and water, using aerator. Presses aerator fork into soil and pulls rake through grass to cultivate areas not accessible to machines. Distributes granulated fertilizers, pesticides, and fungicides on lawn, using spreader. Records services rendered, materials used, and charges assessed on specified form. Transports thatcher, aerator, tools, and materials to and from job site, using truck with hydraulic lift-gate. May care for athletic field turf and be designated ATHLETIC TURF WORKER (amuse. & rec.).

406.687-010 GROUNDSKEEPER, PARKS AND GROUNDS (gov. ser.) park worker.

Keeps grounds of city, State, or national park and playgrounds clean and repairs buildings and equipment: Mows lawns, using hand mower or power-driven lawnmower. Grubs and weeds around bushes, trees, and flower beds and trims hedges. Picks up and burns or carts away paper and rubbish. Repairs and paints benches, tables, guardrails, and assists in repair of roads, walks, buildings, and mechanical equipment using handtools. Cleans comfort stations and other buildings. May live on site and be designated CAMPGROUND CARETAKER (gov. ser.).

406.683-010 GREENSKEEPER (any ind.) II laborer, golf course.

Performs any combination of the following duties, as directed by GREENSKEEPER (any ind.) I, to maintain grounds and turf of golf course in playing condition: Operates tractor, using specific attachments, to till, cultivate, and grade new turf areas, to apply prescribed amounts of lime, fertilizer, insecticide, and fungicide, and to mow rough and fairway areas at designated cut, exercising care not to injure turf or shrubs. Cuts turf on green and tee areas, using hand mower and power mower. Connects hose and sprinkler systems at designated points on course to irrigate turf. Digs and rakes ground to prepare new greens, grades and cleans traps and repairs roadbeds, using shovels, rakes, spades, and other tools. May plant, trim, and spray trees and shrubs.

406.684-014 GROUNDSKEEPER, INDUSTRIAL-COMMERICAL (any ind.)
caretaker, grounds; gardener; yard laborer.

Maintains grounds of industrial, commercial, or public property, performing combination of following tasks: Cuts lawns, using hand mower or power mower. Trims and edges around walks, flower beds, and walls, using clippers and edging tools. Prunes shrubs and trees to shape and improve growth, using shears. Sprays lawn, shrubs, and trees with fertilizer or insecticide. Rakes and burns leaves and cleans or sweeps up litter, using spiked stick or broom. Shovels snow from walks and driveways. Spreads salt on public passage ways. Plants grass, flowers, trees, and shrubs. Waters lawn and shrubs during dry periods, using hose or by activating fixed or portable sprinkler system. Repairs fences, gates, walls, and walks, using carpentry and masonry tools. Paints fences and outbuildings. Cleans out drainage ditches and culverts, using shovel and rake. Depending on size and nature of employing establishment, uses tractor equipped with attachments, such as mowers, lime-or fertilizer-spreaders, and lawn roller. May perform variety of laboring duties, common to type of employing establishment, when yard work is completed.

405.687-014 HORTICULTURAL WORKER (agric.) II

Performs any combination of following duties concerned with preparing soil and growth media, cultivating, and otherwise participating in horticultural activities under supervision on acreage, in nursery, or in environmentally-controlled structure, such as greenhouse and shed: Hauls and spreads topsoil, fertilizer, peat moss, and other materials to condition land. Digs, rakes, and screens soil and fills cold frames and hot beds to prepare them for planting. Fills growing tanks with water. Plants, sprays, weeds, and waters plants, shrubs, trees. Sows grass seed and plants plugs of sod and cuts, rolls, and stacks sod. Perpares scion and ties buds to assist worker budding roses. Traps and poisons pests, such as moles, gophers, and mice. Plants shrubs and plants in containers. Ties, bunches, wraps, and packs flowers, plants, shrubs, and trees to fill orders. Moves containerized shrubs and trees, using wheelbarrow. Digs up shrubs and trees and wraps their roots with burlap. May be designated according to employing establishment as GRASS-FARM LABORER (agric.); GREENHOUSE LABORER (agric.); NURSERY LABORER (agric.); ROSE-FARM LABORER (agric.); or according to horticultural specially as BEAN-SPROUT LABORER (agric.); MUSHROOM LABORER (agric.).

408.161-010 LANDSCAPE GARDENER (agric.) landscaper.

Plans and executes small scale landscaping operations and maintains grounds and landscape of private and business residences: Participates with LABORER, LANDSCAPE (agric.) in preparing and grading terrain, applying fertilizers, seeding and sodding lawns, and transplanting shrubs and plants, using manual and power-operated equipment. Plans lawns, and plants and cultivates them, using gardening implements and power-operated equipment. Plants new and repairs established lawns, using seed mixtures and fertilizers recommended for particular soil type and lawn location. Locates and plants shrubs, trees, and flowers selected by property owner or those recommended for particular landscape effect. Mows and trims lawns, using hand mower or power mower. Trims shrubs and cultivates gardens. Cleans grounds, using rakes, brooms, and hose. Sprays trees and shrubs, and applies supplemental liquid and dry nutrients to lawn and trees. May dig trenches and install drain tiles. May make repairs to concrete and asphalt walks and driveways.

405.684-014 HORTICULTURAL WORKER (agric.) I

Plants, cultivates, and harvests horticultural specialties, such as flowers and shrubs, and performs related duties in environmentally-controlled structure applying knowledge of environmental systems: Ascertains growing schedules and deviations from established procedures from grower or manager. Sows seed and plants cuttings. Looks at and feels leaf texture, bloom development, and soil condition to determine nutrient and moisture requirements and to detect and identify germ and pest infestations. Sets fertilizer timing and metering devices that control frequency and amount of nutrients to be introduced into irrigation system. Applies herbicides, fungicides, and pesticides to destroy undesirable growth and pests, using spray wand connected to solution tank. Reads and interprets sensing indicators and regulates humidity, ventilation, and carbon dioxide systems to control environmental conditions. Grafts scions to seedling stock. Pollinates, prunes, transplants, and pinches plants, and culls flowers, branches, fruit, and plants to insure development of marketable products. Harvest, packs, and stores crop, using techniques appropriate for individual horticultural specialty. May maintain and repair hydroponic and environmental control systems. May maintain and repair structures, using materials, such as corrugated fiberglass panels, lath, glass panes, and putty, and tools, such as hammer, saw, and putty knife. May be designated according to work location as GREENHOUSE WORKER (agric.); according to techniques employed as HYDROPONICS WORKER (agric.); or according to horticultural specialty as ORCHID WORKER (agric.).

*Dictionary of Occupational Titles, 1977 ed.

TASK LISTING BY D.O.T. CODE

In this section the occupational exit points from the curriculum are cross referenced with the tasks which are required for employment in each job title. On the line following each task an x appears in the column of each job title to which to task applies. All the tasks listed in this matrix are taught in the curriculum presented in this guide. A detailed treatment of each task appears in the Unit Guides section of this curriculum guide.

TASK LISTING BY DOT CODE

ORNAMENTAL HORTICULTURE

TASK NO.	TASK NAME	POSSIBLE EXIT POINTS						
	DOT DESCRIPTIONS	Landscape Gardener	Horticulture Worker II	Groundskeeper, Industrial-Commercial	Greenskeeper II	Groundskeeper, Parks and Grounds	Lawn-Service Worker	Laborer, Landscape
	DOT NO.	408.161-010	405.687-014	406.684-014	406.683-010	406.687-010	408.684-010	408.687-014
OHP-01	Exploring careers in ornamental horticulture	X	X	X	X	X	X	X
HS-01	Identifying basic plant parts and their functions	X	X	X	X	X		
HS-02	Describing the basic properties of soils	X	X	X	X	X		
HS-03	Relating fertilizer to plant nutrient requirements	X	X	X	X	X		
HS-04	Taking soil samples and performing soil tests	X	X	X	X	X		
HS-05	Using pesticides safely	X	X	X	X	X	X	X
IDC-01	Controlling insects	X	X	X	X	X	X	X
IDC-02	Controlling plant diseases	X	X	X	X	X		
HP-01	Identifying vines, groundcovers, shrubs and trees	X	X	X	X	X	X	X
HP-02	Identifying annuals and perennials used for landscaping	X	X	X	X	X	X	X
PP-01	Propagating plants from seed	X	X					
PP-02	Propagating ornamental plants by cuttings	X	X					

TASK LISTING BY DOT CODE

ORNAMENTAL HORTICULTURE

POSSIBLE EXIT POINTS

	DOT DESCRIPTIONS	Landscape Gardener	Horticulture Worker II	Groundskeeper, Industrial-Commercial	Groundskeeper II	Groundskeeper, Parks and Grounds	Lawn-Service Worker	Laborer, Landscape
	DOT NO.	408.161-010	405.687-014	406.684-014	406.683-010	406.687-010	408.684-010	408.687-014
TASK NO.	TASK NAME							
PP-03	Propagating plants by grafting	X	X					
GLP-01	Potting bedding plants	X	X					X
GLP-02	Planting a liner stock	X	X					X
GLP-03	Maintaining nursery plants	X	X					X
PLP-01	Planting vines, shrubs and trees	X	X	X	X	X	X	X
PLP-02	Planting groundcovers	X	X	X	X	X	X	X.
PLP-03	Planting bedding plant	X	X	X	X	X	X	X
PLP-04	Planting bulbs	X	X	X	X	X	X	X
MLP-01	Watering plants	X	X	X	X	X	X	X
MLP-02	Fertilizing trees and shrubs	X	X	X	X	X	X	X
MLP-03	Pruning landscape plants	X	X	X	X	X	X	X
MLP-04	Maintaining flower beds	X	X	X	X	X	X	X
MLP-05	Controlling insects and diseases of							
	landscape plants	X	X	X	X	X	X	
EMT-01	Selecting lawn grasses	X	X	X	X	X	X	
EMT-02	Preparing the soil for a lawn	X	X	X	X	X	X	X
EMT-03	Planting the lawn	X	X	X	X	X	X	X
EMT-04	Irrigating turfgrass	X	X	X	X	X	X	X
EMT-05	Fertilizing turfgrass	X	X	X	X	X	X	X
EMT-06	Mowing grass	X	X	X	X	X	X	X

TASK LISTING BY DOT CODE

ORNAMENTAL HORTICULTURE

POSSIBLE EXIT POINTS

TASK NO.	TASK NAME	Landscape Gardener	Horticulture Worker II	Groundskeeper, Industrial-Commercial	Greenskeeper II	Groundskeeper, Parks and Grounds	Lawn-Service Worker	Laborer, Landscape
	DOT DESCRIPTIONS / DOT NO.	408.161-010	405.687-014	406.684-014	406.683-010	406.687-010	408.684-010	408.687-014
EMT-07	Improving established turfgrass	X	X	X	X	X	X	X
EMT-08	Controlling lawn insects	X	X	X	X	X	X	
EMT-09	Controlling lawn diseases	X	X	X	X	X	X	
EMT-10	Controlling weeds in turfgrass	X	X	X	X	X	X	
EMT-11	Maintaining golfgreens and fairways					X	X	
GP-01	Identifying house plants	X	X					
GP-02	Identifying cut flowers and flowering potted plants	X	X					
MGS-01	Describing greenhouses and other plant growing structures	X	X					
MGS-02	Controlling the greenhouse environment	X	X					
MGS-03	Growing bedding plants	X	X					
MGS-04	Producing pot plants	X	X					
MGS-05	Forcing bulbs	X	X					
MGS-06	Producing cut flowers	X	X					
PL-01	Selecting landscape plants for balance and texture	X	X					
PL-02	Using non-plant materials and structures in a landscape	X	X					
PL-03	Designing the landscape	X						

TASK LISTING BY DOT CODE

ORNAMENTAL HORTICULTURE

POSSIBLE EXIT POINTS

TASK NO.	TASK NAME	Landscape Gardener	Horticulture Worker II	Groundskeeper, Industrial-Commercial	Greenskeeper II	Groundskeeper, Parks and Grounds	Lawn-Service Worker	Laborer, Landscape
	DOT NO.	408.161-010	405.687-014	406.684-014	406.683-010	406.687-010	408.684-010	408.687-014
MHP-01	Marketing horticulture products	X						

SECTION III

UNIT GUIDES

Section III Content List

Unit Guide Description
Suggested Sequence of Unit Guides

In Section II, the occupational area was introduced. Section III continues this development by presenting, for each task, a unit guide for instructional planning and execution.

The instruction of specific tasks is central to vocational education. However, the value of a single task/competency to the student as a prospective member of the workforce is dependent upon the way in which that task/competency is related to other tasks and to the entire occupational area. Therefore, the Ornamental Horticulture Program Task Listing provides a sample organizational model for sequencing the instruction of program tasks.

UNIT GUIDES DESCRIPTION

In this section the tasks to be taught in each course are presented in sequential order. Each task is listed on a separate page so that it may be taken out of the guide for daily lesson planning or regrouped with order tasks to fit the individual teacher's preference for teaching order. The task pages may be used for planning and executing group instruction or for individualized instruction. Each page in the UNIT GUIDES section contains the following information:

TASK: This is a short and concise statement of the task to be taught.

PERFORMANCE OBJECTIVE: The performance expected of the student after completing the unit is stated in stem form, without a specific statement of all conditions, equipment and performance standard (these are listed in a criterion referenced measure in the Evaluation section of the task page).

INSTRUCTIONAL ACTIVITIES: Suggested learning activities are presented. These activities include providing information, demonstration, practical applications and projects.

INSTRUCTIONAL MATERIALS: Suggested materials for carrying out the instructional activities are listed. these include textbooks, audiovisuals and equipment. Textbooks are referenced by author and title with the complete reference contained in the textbook list in the Instructional Resources section.

EVALUATION: This section contains a criterion referenced measure and reference to any test items or other evaluation measures that are available to teacher.

CLASS/LAB HOURS: The estimated time for completion of the instructional activities and the evaluation are indicated in both classroom and lab hours. Total instructional time would be the sum of these.

ORNAMENTAL HORTICULTURE TASK INDEX

Page No.

ORIENTATION TO THE HORTICULTURE PROGRAM

OHP-01 Exploring careers in ornamental horticulture.......11

HORTICULTURE SCIENCE

HS-01 Identifying basic plant parts and their functions........13
HS-02 Describing the basic properties of soil............15
HS-03 Relating fertilizer to plant nutrient requirements........17
HS-04 Taking soil samples and performing soil tests........19
HS-05 Using pesticides safely........21

INSECT AND DISEASE CONTROL

IDC-01 Controlling insects........23
IDC-02 Controlling plant diseases........25

ORNAMENTAL HORTICULTURE PLANTS

HP-01 Identifying vines, groundcovers, shrubs and trees........27
HP-02 Identifying annuals and perennials used for landscaping........29

PROPAGATING PLANTS

PP-01 Propagating plants from seed........31
PP-02 Propagating ornamental plants by cuttings..........33
PP-03 Propagating plants by grafting........35

GROWING LANDSCAPE PLANTS

GLP-01 Potting bedding plants........37
GLP-02 Planting a liner stock........39
GLP-03 Maintaining nursery plants........41

PLANTING LANDSCAPE PLANTS

PLP-01 Planting vines, shrubs and trees........43
PLP-02 Planting groundcovers........45
PLP-03 Planting bedding plants........47
PLP-04 Planting bulbs........49

Page No.

MAINTAINING LANDSCAPE PLANTS

MLP-01 Watering plants....51
MLP-02 Fertilizing trees and shrubs....53
MLP-03 Pruning landscape plants....55
MLP-04 Maintaining flower beds....57
MLP-05 Controlling insects and diseases of landscape plants....59

ESTABLISHING AND MAINTAINING TURFGRASS

EMT-01 Selecting lawn grasses....61
EMT-02 Preparing the soil for a lawn....63
EMT-03 Planting the lawn....65
EMT-04 Irrigating turfgrass....67
EMT-05 Fertilizing turfgrass....69
EMT-06 Mowing grass....71
EMT-07 Improving established turfgrass....73
EMT-08 Controlling lawn insects....75
EMT-09 Controlling lawn diseases....77
EMT-10 Controlling weeds in turfgrass....79
EMT-11 Maintaining golfgreens and fairways....81

GREENHOUSE PLANTS

GP-01 Identifying house plants....83
GP-02 Identifying cut flowers and flowering potted plants....85

MANAGING THE GREENHOUSE AND RELATED STRUCTURES

MGS-01 Describing greenhouses and other plant growing structures....87
MGS-02 Controlling the greenhouse environment....89
MGS-03 Growing bedding plants....91
MGS-04 Producing pot plants....93
MGS-05 Forcing bulbs....95
MGS-06 Producing cut flowers....97

PLANNING THE LANDSCAPE

PL-01 Selecting landscape plants for balance and texture....99
PL-02 Using non-plant materials and structures in a landscape....101
PL-03 Designing the landscape....103

MARKETING HORTICULTURE PRODUCTS

Page No.

MHP-01 Marketing horticulture products....................105

TASK

OHP-01 Exploring careers in ornamental horticulture

PERFORMANCE OBJECTIVE

Explore careers in ornamental horticulture.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Occupations
b. Job skills
c. Technical skills
d. Personal-social skills
e. Acquiring skills
f. Career ladder

INSTRUCTIONAL MATERIALS

Textbooks:

a. Reiley and Shry, Introductory Horticulture
b. Richardson and Moore, Working in Horticulture
c. U.S. Department of Labor, Dictionary of Occupational Titles

A/Vs:

Vocational Education Productions, "Ornamental Horticulture," sound filmstrip

LAB HOURS	
CLASS HOURS	12

EVALUATION (OHP-01)

a. Given the necessary reference materials, the student will list at least three ornamental horticulture occupations, describe the requirements of each and identify the career ladder in horticulture. Evaluation will be based on completion of the assignment.

b. Reiley and Shry, Introductory Horticulture, Instructor's Guide.

TASK

HS-01 Identifying basic plant parts and their functions

PERFORMANCE OBJECTIVE

Identify basic plant parts and their functions.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance of plants in our environment
b. Cells
    1. Structure
    2. Parts
c. Osmosis
d. Roots
    1. Types
    2. Structure
    3. Modified roots
e. Leaf
    1. Photosynthesis
    2. Respiration
    3. Transpiration
    4. Effects of light
    5. Stoma
f. Stems
    1. Types
    2. Features
    3. Modified stems
    4. Internal anatomy
g. Flowers and seed
    1. Parts of flower
    2. Pollination
h. Fruits and seeds
    1. Types
    2. Method of dispersal
    3. Anatomy
    4. Factors in germination

INSTRUCTIONAL MATERIALS

Textbooks:

a. Richardson and Moore, Working in Horticulture
b. Reiley and Shry, Introductory Horticulture
c. Vocational Education Productions, Exercises in Biological Principles for Agricultural Crops
d. Ohio, The Nursery Worker, Part I
e. Any basic horticulture or botany textbooks

LAB HOURS	
CLASS HOURS	52

EVALUATION (HS-01)

a. Given drawings of the following plant parts, the student will identify the indicated parts with 80% accuracy.
   1. Cell
   2. Cross section of a leaf
   3. Cross section of a stem
   4. Young root
   5. Flower
   6. Seed

b. Given a list of plant parts and a random list of function of the parts, the student will match the parts with the correct function with 80% accuracy.

c. Reiley and Shry, Introductory Horticulture, Instructor's Guide.

TASK

HS-02 Describing the basic properties of soils

PERFORMANCE OBJECTIVE

Describe the basic properties of soils.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance and purpose of soil
b. Soil texture
    1. Types of soils
    2. Water holding capacities
    3. Water and oxygen relationships
    4. Plant root relationships
c. Chemical properties
    1. pH
    2. Soil fertility (primary and secondary nutrients)
    3. Ion exchange
d. Organic soils
    1. Developing organic soils
    2. Water holding capacity
    3. Effect on root systems
    4. Fertility
e. Horticulture soils

INSTRUCTIONAL MATERIALS

Textbooks:

a. Richardson and Moore, Working in Horticulture
b. Reiley and Shry, Introductory Horticulture
c. Ortho, All About Fertilizer, Soils and Water
d. Ohio, The Nursery Worker, Part I; How Water Moves in Soil

A/Vs:

Ohio, "Soil and Its Properties," slides; "Liming Acid Soils," slides

LAB HOURS	
CLASS HOURS	26

EVALUATION (HS-02)

a. Given instruction and related information, the student will describe the basic properties of soils with 80% accuracy.

b. Reiley and Shry, Introductory Horticulture, Instructor's Guide.

TASK

HS-03 Relating fertilizer to plant nutrient requirements

PERFORMANCE OBJECTIVE

Relate fertilizer to plant nutrient requirements.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Essential plant nutrients
  1. Major elements
  2. Minor elements
b. Role of the major elements
c. Relation of pH levels and nutrient availability
d. Adjusting pH levels
e. Ion exchange (review)
f. Synthetic fertilizers
  1. Formulations
  2. Calculating nutrient content
g. Fertilizer burn
h. Organic fertilizer
i. Slow release fertilizers
j. Soil tests
k. Tissue tests

INSTRUCTIONAL MATERIALS

Textbooks:

a. Richardson and Moore, Working in Horticulture
b. Reiley and Shry, Introductory Horticulture
c. Ortho, All About Fertilizers, Soils and Water
d. Vocational Education Productions, Experiments in Soil Science
e. Ohio, The Nursery Worker, Part I

A/Vs:

Ohio, "Liming Acid Soils," slides

LAB HOURS	
CLASS HOURS	26

EVALUATION (HS-03)

a. Given instructions and related information, the student will
   1. Identify major and minor fertilizer elements
   2. Identify the role of the major elements
   3. Calculate nutrient content in specified measure of synthetic fertilizer
   4. Describe adjusting pH levels and
   5. Discuss the role of organic fertilizers with 80% accuracy

b. Reiley and Shry, Introductory Horticulture, Instructor's Guide.

TASK

HS-04 Taking soil samples and performing soil tests

PERFORMANCE OBJECTIVE

Take soil samples and perform soil tests.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance of soil testing
b. When to take a soil test
c. Tools used in taking a soil sample
d. Taking a soil sample
e. Methods of preparing soil for testing
f. Methods of testing soil samples
    1. Kits
    2. Equipment
    3. State and commercial laboratories
g. Reading and interpreting soil test analysis

Provide Demonstration On:

Taking soil samples and testing soil

Provide Practical Application On:

Having the student demonstrate the proper steps in taking a soil sample and testing a sample

INSTRUCTIONAL MATERIALS

Textbooks:

a. Beard, Turfgrass: Science and Culture
b. Richardson, Working in Horticulture
c. Georgia Cooperative Extension Service, Soil Testing

Tools and Equipment:

a. Shade, soil auger or soil tube
b. Soil container
c. Soil test kit
d. Solu-bridge or equivalent equipment
e. pH meter

LAB HOURS	10
CLASS HOURS	3

EVALUATION (HS-04)

a. Given a planting bed or other field areas, a spade, soil auger and plastic bags or other suitable containers, the student will take soil samples. Two samples must be taken and each must comprise approximately one pint of soil. Samples must be representative of the area and be a composite of soil taken from not less than ten different holes and from a grid covering only one soil type.

b. Given soil samples, supplies and necessary information, the student will send samples for analysis. Information on the sample container must be complete and correct. The analysis sheet must be firmly attached to the soil container.

c. Given three equivalent soil samples, an electric pH meter and a manual of instructions, the student will determine the soil pH for each of the three samples. Readings on the three samples tested must agree ±0.1 pH unit.

d. Given a soil sample, an instrument (Solu-bridge or equivalent) and a chart for interpreting readings, the student will determine the soluble salts in the sample. Readings must vary no more than ±5 percent from a prepared and predetermined sodium standard solution.

e. Given a soil sample, a soil testing kit and a manual of instruction, the student will determine the soil pH and soil nutrient level of the sample.

TASK

HS-05 Using pesticides safely

PERFORMANCE OBJECTIVE

Use pesticides safely.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Identifying pests and pesticides
b. Selecting pesticides
c. Handling pesticides safely
d. Selecting pesticide application equipment
e. Operating pesticide equipment
f. Cleaning and storing pesticide application equipment

INSTRUCTIONAL MATERIALS

Textbooks:

AAVIM, Applying Pesticides

Student Manuals:

AAVIM, Applying Pesticides

A/Vs:

AAVIM, "Applying Pesticides," slide/tape

LAB HOURS	
CLASS HOURS	26

EVALUATION (HS-05)

Given instructions and related information, the student will describe

a. The different types of pesticides
b. Methods of application
c. Safety in handling pesticides and
d. The use and care of application equipment

Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

IDC-01 Controlling insects

PERFORMANCE OBJECTIVE

Control insects.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Insects found in lawn and garden
b. Beneficial insects
c. Destructive insects
d. Anatomy of insects
e. Feeding characteristics
f. Pesticides
g. Use of pesticides (review)
h. Collecting and mounting insects

Provide Demonstration On:

Collecting and mounting insects

Provide Practical Application On:

Having students make an insect collection specifying certain insects they should look for

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Clemson University Extension Service, Insects and Diseases of Ornamentals
c. Richardson, Working in Horticulture
d. Ortho, All about Lawns
e. Vocational Education Productions, Insect Identification Manual

Tools and Equipment:

a. Insect net
b. Killing jar
c. Mounting board
d. Mounting pins

LAB HOURS	10
CLASS HOURS	16

EVALUATION (IDC-01)

a. Given the necessary equipment and supplies, the student will collect and mount specified insects. The insects must be correctly mounted and identified.

b. Written examination: Evaluation will be based on criteria specified by the instructor.

TASK

IDC-02 Controlling plant diseases

PERFORMANCE OBJECTIVE

Control plant diseases.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Bacterial diseases
b. Fungi diseases
c. Symptoms
d. Control measures
    1. Chemical
    2. Environmental
    3. Safety
e. Identification of diseases

Provide Practical Application On:

Having student survey area and collecting specimens from diseased plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Clemson University Extension Service, Insects and Diseases of Ornamentals
c. Richardson, Working in Horticulture
d. Ortho, All about Lawns
e. Forsberg, Diseases of Ornamental Plants

LAB HOURS	6
CLASS HOURS	20

EVALUATION (IDC-02)

Given the necessary information and related instruction, the student will identify diseases of plant and control measures for each disease. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

HP-01 Identifying vines, groundcovers, shrubs and trees

PERFORMANCE OBJECTIVE

Identify vines, groundcovers, shrubs and trees.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Plant identification vocabulary
b. Scientific and common names
c. Identification characteristics
    1. Growth characteristics
    2. Leaf shape, size and arrangement
    3. Leaf margins
    4. Flowers
    5. Fruit
d. The hardy zone of plants

Provide Demonstration On:

The proper procedures for identifying landscape plants

Provide Practical Application On:

a. Touring area and locating specified plants
b. Making a leaf collection and identify the plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia Cooperative Extension Service, Landscape Plant Materials for Georgia
b. Georgia, Landscape Plant Identification and Landscape Plant Identification Keys

Student Manuals:

Georgia, Landscape Plant Identification, PLACE Package

Tools and Equipment:

Landscape plants

LAB HOURS 18
CLASS HOURS 20

EVALUATION (HP-01)

a. Given a group of landscape plants or pictures of the plants, the student will correctly identify at least 90% of the plants.

b. Georgia, Landscape Plant Identification, PLACE package, test questions.

TASK

HP-02 Identifying annuals and perennials used for landscaping

PERFORMANCE OBJECTIVE

Identify annuals and perennials used for landscaping.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Plant identification vocabulary
b. Scientific and common names
c. How the differences in plants can be identified
    1. Growth characteristics
    2. Leaf shape, size and arrangement
    3. Leaf margins
    4. Flowers
    5. Fruit
d. Environmental requirements

Provide Demonstration On:

Having proper procedures of identifying annuals and perennials

Provide Practical Application On:

a. Touring area and locating specific plants
b. Collecting leaves and flowers and identifying the plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ortho, *Gardening with Color*
b. Georgia Cooperative Extension Service, *Annual Flowers*

A/Vs:

Ohio, "Annuals," slides; "Perennials," slides

Tools and Equipment:

Annual and perennial plants

LAB HOURS 8
CLASS HOURS 6

EVALUATION (HP-02)

Given a group of annual and perennial plants or pictures of the plants, the student will identify at least 90% of the plants.

TASK

PP-01 Propagating plants from seed

PERFORMANCE OBJECTIVE

Propagate plants from seed.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Planting depth and spacing
b. Germinating/growing media
c. Types of flats
d. Watering seeds
e. Applying fungicide
f. Controlling the environment
g. Acquiring good seeds
h. Types of seeds
i. Difficult seeds
    1. Dormancy
    2. Stratification methods
j. Controlling soil temperature

Provide Demonstration On:

Preparing media and planting the seed

Provide Practical Application On:

Having the students prepare the media and plant a flat of seed

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, *Ornamental Horticulture*
b. Georgia, *Introduction to Plant Propagation*; *Procuring Bedding Plant Seed*; *Germinating Bedding Plant Seed* and *Transplanting Seedlings*
c. Ohio, *Tips on Growing Bedding Plants*, *The Nursery Worker, Part II*
d. Brooklyn Botanic Garden, *Handbook on Propagation*

A/Vs:

Vocational Education Productions, "Bedding Plant Production," sound filmstrip

Tools and Equipment:

a. Seeds
b. Growing media
c. Flats

LAB HOURS	7
CLASS HOURS	6

EVALUATION (PP-01)

Given bedding plant seed and the necessary equipment and supplies, the student will prepare the media and plant the seed. The media must be of the proper texture and the seeds must be spaced and covered in accordance with the requirements of the plant species.

62

TASK

PP-02 Propagating ornamental plants by cuttings

PERFORMANCE OBJECTIVE

Propagate ornamental plants by cuttings.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance of cuttings
b. Types of cuttings
   1. Stem
   2. Leaf
   3. Leaf bud
   4. Root
c. Methods of taking cuttings
d. Rooting hormones
e. Rooting media
f. Sticking cuttings
g. Maintaining high humidity
h. Sanitation and disease control

Provide Demonstration On:

The methods of taking and planting cuttings

Provide Practical Application On:

Having the student prepare rooting media, taking cuttings, prepare the cuttings and stick the cuttings

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia Cooperative Extension Service, Propagating Shrubs from Cuttings
b. Richardson, Working in Horticulture
c. McDaniel, Ornamental Horticulture
d. Ohio, The Nursery Worker, Part II
e. Vocational Education Productions, Nursery Practices

A/Vs:

Vocational Education Productions, "Propagating Ornamental Plants," sound filmstrip

Tools and Equipment:

a. Pruning shears
b. Pruning knife
c. Ingredients for mixing rooting media
d. Flats

(Continued on back)

LAB HOURS	
CLASS HOURS	16

EVALUATION (PP-02)

Given stock plants to use for taking cuttings, necessary equipment and supplies, the student will take cuttings and stick the cuttings. Satisfactory completion is realized when the following criteria is met

a. Cuttings are taken from current terminal wood
b. The cut is made at a 45° angle
c. The lower 1/3 to 1/2 of the leaves must be removed
d. Base of cutting must be dipped in hormone and stuck 1/3 of its length in the rooting media
e. Cuttings must be spaced so that the leaves barely overlap

TASK

PP-03 Propagating plants by grafting

PERFORMANCE OBJECTIVE

Propagate plants by grafting.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance and purpose of grafting
b. Methods of grafting
    1. Whip
    2. Splice
    3. Side
    4. Stub
    5. Cleft
    6. Saw-kerf
    7. Bark
    8. Approach
    9. Inarching
c. Establishing a graft union
d. Tools and accessories
e. Selecting material for grafting
    1. Scions
    2. Rootstocks
f. Protecting a graft union

Provide Demonstration On:

Grafting

Provide Practical Application On:

Having the student take cuttings for grafts and making grafts

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia Cooperative Extension Service, *Grafting Camellias*
b. Richardson, *Working in Horticulture*
c. McDaniel, *Ornamental Horticulture*
d. Brooklyn Botanic Garden, *Handbook on Propagation*
e. Ohio, *The Nursery Worker, Part II*

A/Vs:

Vocational Education Productions, "Budding and Grafting," sound filmstrip; "Propagating Ornamental Plants," sound filmstrip

Tools and Equipment:

a. Knife
b. Grafting wax

(Continued on back)

LAB HOURS 5

CLASS HOURS 8

EVALUATION (PP-03)

Given a scion or a scion source, a stock plant and the necessary equipment and supplies, the student will perform a graft. The completed graft must have the cambium layers of the stock and scion in proper contact and the area around the graft must be sealed to prevent the graft from drying.

INSTRUCTIONAL MATERIALS

Tools and Equipment:

c. Grafting tape
d. Pruning saw
e. Scion wood
f. Pruning shears
g. Root stocks

TASK

GLP-01 Potting bedding plants

PERFORMANCE OBJECTIVE

Pot bedding plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Preparing growing media
b. Depth of planting
c. Growth rate
d. Handling plants
e. Plant treatment
f. Selecting container size
g. Equipment and tools for potting
h. Operating and service of equipment and tools
i. Equipment safety

Provide Demonstration On:

The procedures for potting bedding plants

Provide Practical Application On:

Having the student pot different types of bedding plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia, Procuring Containers for Greenhouse Plants
b. Richardson, Working in Horticulture
c. Georgia Cooperative Extension Service, Artificial Soil Mixes
d. Ohio, Tips on Growing Bedding Plants
e. McDaniel, Ornamental Horticulture

A/Vs:

Vocational Education Productions, "Bedding Plant Production," filmstrip

Tools and Equipment:

a. Plants
b. Containers
c. Growing media
d. Hand trowels
e. Dibble

LAB HOURS	4
CLASS HOURS	2

EVALUATION (GLP-01)

a. Given seedlings ready to be planted in pots, necessary equipment and supplies, the student will transplant seedlings to pots. The following criteria must be met
   1. Container filled approximately 2/3 full with potting soil mixture
   2. Roots of plant are placed on top of the soil, more soil added to cover the roots

b. Written examination: Evaluation will be based on criteria specified by the instructor.

TASK

GLP-02 Planting a liner stock

PERFORMANCE OBJECTIVE

Plant a liner stock.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Soil preparation and cultivation
b. Planting depth
c. Planting methods
    1. Fields
    2. Containers
d. Watering
e. Time of planting
f. Handling

Provide Demonstration On:

Planting liner stock in containers and field

Provide Practical Application On:

Having the student demonstrate the proper method of planting liner stock

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia Cooperative Extension Service, Transplanting Seedling Trees
b. Ohio, The Nursery Worker, Part II
c. McDaniel, Ornamental Horticulture
d. American Association of Nurserymen, Inc., American Standard for Nursery Stock

A/Vs:

Vocational Education Productions, "Growing Media for Ornamental Plants," sound filmstrip

Tools and Equipment:

a. Liners (sources 1)
b. Bed area
c. Shovel
d. Spade

LAB HOURS	3
CLASS HOURS	3

EVALUATION (GLP-02)

a. Given liners to be transplanted to the field, necessary equipment and supplies, the student will transplant the liners to the field. All plants must be upright, all roots must be covered and the soil must be packed firmly around each plant.

b. Given liners to be transplanted in containers, the student will transplant the liners to the containers. All plants must be upright, all roots must be covered, the soil must be packed firmly around each plant and the soil must be at least an inch below the rim of the container.

TASK

GLP-03 Maintaining nursery plants

PERFORMANCE OBJECTIVE

Maintain nursery plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Container and field plants
b. Fertilizing
c. Watering
d. Pruning
e. Winter protection
f. Handling
g. Controlling pests

Provide Demonstration On:

Having students visit a nursery operation growing nursery plants in containers and/or fields

Provide Practical Application On:

Having the students maintain a group of nursery plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Georgia Cooperative Extension Service, Disease Free Nursery Stock Production; The Effect of Soil Aeration and Drainage on the Root Growth of Ornamentals
c. Vocational Education Productions, Growing Container Plants
d. Dickey, Container Growing

Tools and Equipment:

a. Container stock
b. Water source
c. Fertilizer
d. Pesticides

LAB HOURS	6
CLASS HOURS	8

7-

EVALUATION (GLP-03)

a. Given an area of nursery container plants and the necessary equipment and supplies, the student will develop a maintenance plan and maintain the container stock for an assigned number of days. The stock must remain healthy and exhibit continued growth relative to the season and age of the plant.

b. Given the necessary information and related instruction, the student will describe the procedures for maintaining nursery container plants. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

PLP-01 Planting vines, shrubs and trees

PERFORMANCE OBJECTIVE

Plant vines, shrubs and trees.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Spacing
b. Depth of planting
c. Growth rate
d. Handling plants
e. Plant treatment
f. Size of plant hole
g. Time of planting
h. Ball and burlap
i. Container plants
j. Bare root
k. Heeling in
l. Installing plant supports
m. Wrapping plants
n. Mulching plants

Provide Demonstration On:

Planting different size plants

Provide Practical Application On:

Having the student plant trees and shrubs

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Richardson, Working in Horticulture
c. Georgia Cooperative Extension Service, Planting Shrubs; Tree Planting Procedures; Spacing Plant Materials-Shrubs; Spacing Plant Materials-Trees
d. Georgia, Planting Shrubs and Trees

Tools and Equipment:

a. Shovel
b. Spade
c. Pick
d. Soil amendments

LAB HOURS	4
CLASS HOURS	6

EVALUATION (PLP-01)

a. Given annual plants in containers, a seedbed, water supply and access to planting tools, the student will plant annual flowers. The leaves, stems and roots of the plants must not be broken during the planting process. A visual inspection after 6 hours must show that plants have not wilted.

b. Given shrubs and/or trees, necessary equipment and supplies, the student will plant the shrubs and/or trees. The shrubs and/or trees must be planted in holes twice the diameter of the root system and 6 inches deeper than the root system.

c. Given the necessary information and related instruction, the student will describe the procedures for planting vines, shrubs and trees. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

PLP-02 Planting groundcovers

PERFORMANCE OBJECTIVE

Plant groundcovers.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Preparing the soil
b. Depth of planting
c. Spacing
d. Time of planting
e. Handling plants
f. Watering
g. Mulching
h. Fertilizing

Provide Demonstration On:

The proper method of planting groundcovers

Provide Practical Application On:

Having the student plant groundcovers

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Georgia Cooperative Extension Service, Groundcovers; Spacing Plant Materials-Groundcovers

Tools and Equipment:

a. Groundcovers
b. Shovel
c. Rake
d. Hand trowel
e. Tiller
f. Soil amendments

LAB HOURS	3
CLASS HOURS	2

EVALUATION (PLP-02)

a. Given groundcover plants and the necessary tools, equipment and supplies, the student will plant the groundcover plants. The plants should be planted at the proper depth and properly spaced.

b. Given the necessary information and related instruction, the student will describe the procedures for planting groundcovers. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

PLP-03 Planting bedding plant

PERFORMANCE OBJECTIVE

Plant bedding plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Selecting the type of annual
b. Designing the beds
c. Preparing the soil
d. Depth of planting
e. Spacing
f. Time of planting
g. Handling plants
h. Watering
i. Mulching
j. Fertilizing

Provide Demonstration On:

Planting annual plants

Provide Practical Application On:

Having the student prepare bed and plant annual plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. Reiley, Introductory Horticulture
b. Ortho, Gardening with Color
c. Georgia Cooperative Extension Service, Edging Beds

Tools and Equipment:

a. Annual plants
b. Planting trowels
c. Shovel
d. Rake
e. Tiller
f. Soil amendments

LAB HOURS	3
CLASS HOURS	2

EVALUATION (PLP-03)

a. Given annual flowers and the necessary tools, equipment and supplies, the student will plant the annual flowers. The annual flowers, when planted should be properly spaced and planted at a proper depth.

b. Given the necessary information and related instruction, the student will describe the procedures for planting and maintaining flower beds. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

PLP-04 Planting bulbs

PERFORMANCE OBJECTIVE

Plant bulbs.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Selecting bulbs
b. Planting depth, space and time
c. Preparing the soil
d. Applying fertilizer
e. Bulb placement
f. Mulching
g. Types of bulbs

Provide Demonstration On:

The method of planting bulbs

Provide Practical Application On:

Having the student plant an area of bulbs

INSTRUCTIONAL MATERIALS

Textbooks:

a. Brooklyn Botanic Garden, *Handbook on Bulbs*
b. Richardson, *Working in Horticulture*

Tools and Equipment:

a. Bulbs
b. Shovel
c. Garden hoe
d. Planting trowel
e. Stakes
f. String

LAB HOURS 4
CLASS HOURS 2

EVALUATION (PLP-04)

a. Given a previously prepared field area, treated bulbs, the required stakes, string, tools and equipment, the student will plant the bulbs. Bulbs will be correctly placed and planted in straight lines, spaced 5 to 6 inches apart and firmly covered with soil to a depth of about ½ inch.

b. Given the necessary information and related instruction, the student will describe the procedure for selecting and planting bulbs. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

MLP-01 Watering plants

PERFORMANCE OBJECTIVE

Water plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Respiration and transpiration (review)
b. Importance of watering
c. Functions of water
d. Soil and water relationship (review)
e. Methods of watering
f. Determining rate and time of water application
g. Different types of watering systems
h. Benefits of mulch (review)
i. Problems of overwatering

INSTRUCTIONAL MATERIALS

Textbooks:

a. Conover, Grounds Maintenance Handbook
b. Richardson, Working in Horticulture
c. Ortho, All About Fertilizers, Soils and Water

LAB HOURS	
CLASS HOURS	6

EVALUATION (MLP-01)

Given the necessary information and related instruction, the student will describe plant irrigation methods and irrigation problems. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

MLP-02 Fertilizing trees and shrubs

PERFORMANCE OBJECTIVE

Fertilize trees and shrubs.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Determining amounts to apply
b. Methods of application
c. Application equipment
d. Cleaning equipment
e. Correct placement
f. When to fertilize
g. Selecting proper fertilizer analysis
h. Fertilization requirements of various types of trees and shrubs
i. Symptoms of deficiency

Provide Demonstration On:

Methods of fertilizing shrubs and trees

Provide Practical Application On:

Having learner determine the amount and type of fertilizer for selected trees and shrubs and apply the fertilizer

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia Cooperative Extension Service, Fertilizing Ornamental Plants; Fertilizing Shrubs
b. McDaniel, Ornamental Horticulture

A/Vs:

Vocational Education Productions, "Fertilizing Ornamental Plants," sound filmstrip

Tools and Equipment:

a. Fertilizer
b. Punch bar
c. Measuring instrument (cup, spoon, etc)
d. Containers (buckets, cans or socks as appropriate)
e. Tissue test kit
f. Soil sampling equipment
g. Soil test kit
h. Root feeder

LAB HOURS	4
CLASS HOURS	4

EVALUATION (MLP-02)

a. Provided with the necessary supplies and equipment, the learner will fertilize selected trees and shrubs. The correct analysis and type of fertilizer must be selected and the correct amount and method of application must be used.

b. Evaluation will be based on criteria specified by the instructor.

TASK

MLP-03 Pruning landscape plants

PERFORMANCE OBJECTIVE

Pruning landscape plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Pruning fundamentals
b. Pruning techniques
c. Pruning tools
d. Operation and service of equipment and tools
e. Equipment safety
f. Time to prune
g. Caring for pruning wounds
h. Removing pruning debris
i. Espalier
j. Pruning hedges

Provide Demonstration On:

a. How and where to make cuts
b. How to pinch, thin, head back and shear
c. How to train a young tree
d. How to espalier a plant

Provide Practical Application On:

Having student prune several plants around the school

INSTRUCTIONAL MATERIALS

Textbooks:

a. Sunset, *Pruning Handbook*
b. McDaniel, *Ornamental Horticulture*
c. Richardson, *Working in Horticulture*
d. Brooklyn Botanic Garden, *Pruning Handbook*
e. Georgia Cooperative Extension Service, *Pruning Shade Trees*; *Pruning Ornamental Shrubs*; *Pruning Overgrown Shrubs*

A/Vs:

Student Manuals:

Georgia, *Pruning*, PLACE package

Tools and Equipment:

a. Pruning shears
b. Lopping shears
c. Hedge shears
d. Pruning saws
e. Pole pruner and saw
f. Rasp
g. Wound dressing

LAB HOURS	10
CLASS HOURS	8

(Continued on back)

EVALUATION (MLP-03)

a. Given an ornamental shrub with branches 3/4" or less in diameter unattended for one year, the student will prune the shrub to provide stimulation and rejuvenation. Use a hand pruning shear and a pruning saw to complete the task. Cuts must be made 1/4" above a bud, small side branch, or main branch. Remaining growth should be well balanced.

b. Given a row of established hedge plants in need of shaping, the student will prune the hedges to desired size using electric and hand hedge shearers. The hedge should be shaped to permit light to stimulate growth on all areas of the hedge.

c. Georgia, Pruning, PLACE package includes test questions.

INSTRUCTIONAL MATERIALS

A/Vs:

Vocational Education Productions, "Elements of Pruning," sound filmstrip

TASK

MLP-04 Maintaining flower beds

PERFORMANCE OBJECTIVE

Maintain flower beds.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Watering
b. Fertilizing
c. Pinching
d. Controlling insects and diseases
e. Controlling weeds

Provide Demonstration On:

The methods of maintaining flower beds

Provide Practical Application On:

Having the students maintain assigned flower beds

INSTRUCTIONAL MATERIALS

Textbooks:

a. Reiley, Introductory Horticulture
b. Georgia Cooperative Extension Service, Mulching Ornamentals
c. Ortho, Gardening with Color

Tools and Equipment:

a. Water sources and hoses
b. Fertilizer
c. Hoes

LAB HOURS 4
CLASS HOURS 2

EVALUATION (MLP-04)

Given a flower bed area and the necessary equipment and supplies, the student will maintain the flower bed. The flower bed must exhibit healthy growth and be free of disease and insects.

TASK

MLP-05 Controlling insects and diseases of landscape plants

PERFORMANCE OBJECTIVE

Control insects and diseases of landscape plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Identifying insects and diseases (review)
b. Selecting control measures
c. Determining application rates
d. Methods of application
e. Equipment and materials for controlling insects
f. Pesticide safety (review)

Provide Demonstration On:

Selecting, mixing and applying a chemical for controlling an identified insect or disease

Provide Practical Application On:

Having the student identify a disease or insect problem and select, mix and apply the proper control

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Clemson University Cooperative Extension Service, Insects and Diseases of Ornamentals
c. Richardson, Working Horticulture
d. Georgia Cooperative Extension Service, Lace Bugs; Bugworms and their Control; Aphids on Ornamental Plants; Control of Some

(Continued on back)

Tools and Equipment:

a. Sprayer
b. Insecticides
c. Fungicides
d. Duster

LAB HOURS	6
CLASS HOURS	8

EVALUATION (MLP-05)

a. Given a list of insects common to ornamental plants, the student will identify the control measures for each insect with 80% accuracy.

b. Given a group of insects common to ornamental plants or pictures of the insects, the student will identify the insects and describe the control measures for each insect with 80% accuracy.

c. Given a list of insects common to ornamental plants and a list of control measures, the student will match each insect with the proper control measure.

d. Given a plant or group of plants infested with an insect or disease, the student will identify the insect or disease and apply the proper control measure. The insect or disease must be identified and the appropriate control must be applied.

INSTRUCTIONAL MATERIALS

Textbooks:

e. Common Pests of Ornamental Plants; Dogwood Borers; Control Insects and Mites on Roses

TASK

EMT-01 Selecting lawn grasses

PERFORMANCE OBJECTIVE

Select lawn grasses.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Identification
b. Growth characteristics
c. The hardy zone of turfgrass
d. Adaptability
e. Type of care required

Provide Demonstration On:

Identifying lawn grasses

Provide Practical Application On:

Having the student identify lawn grasses

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ortho, All About Lawns
b. Georgia Cooperative Extension Service, Lawns in Georgia; Fescue Lawns; Centipede Lawns
c. Beard, Turfgrass: Science and Culture
d. Sunset, Lawns and Groundcovers
e. Georgia, Establishing a Lawn

LAB HOURS 4
CLASS HOURS 6

EVALUATION (EMT-01)

Given a group of common lawn grasses, the student will locate and identify at least 90% of the grasses according to species.

TASK

EMT-02 Preparing the soil for a lawn

PERFORMANCE OBJECTIVE

Describe the preparation of the soil for a lawn.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a

a. Removing debris
b. Adding soil amendments
c. Cultivating the soil
d. Adding fertilizer and lime
e. Establishing final grade
f. Sloping for drainage
g. Soil sterilization
h. Equipment

Provide Practical Application On:

Having the student prepare an area

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ortho, All About Lawns
b. McDaniel, Ornamental Horticulture
c. Richardson, Working in Horticulture
d. Georgia Cooperative Extension Service, Soil Preparation in the Landscape
e. Ohio, Turf Management
f. Equipment brochures from lawn equipment companies
g. Georgia, Establishing a Lawn

Tools and Equipment:

a. Tiller
b. Rake
c. Soil amendments
d. Fertilizer
e. Sterilization chemicals

LAB HOURS	8
CLASS HOURS	4

EVALUATION (EMT-02)

a. Given a designated lawn area and the necessary equipment and supplies, the student will prepare the soil for planting. The area must be free of debris, thoroughly tilled, fertilizer applied and the surface left smooth.

b. Given the necessary information and related instruction, the student will describe the preparation of the soil for a new lawn. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

EMT-03 Planting the lawn

PERFORMANCE OBJECTIVE

Plant the lawn.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

- a. Seeds and seeding
  - 1. Selecting type of seed
  - 2. Germination, weed seed
  - 3. Methods of seeding
  - 4. Seeding equipment
  - 5. Advantage, disadvantage
- b. Sodding, sprigging, plugging
  - 1. Equipment and tools
  - 2. Methods and procedures
  - 3. Advantages, disadvantages
- c. Watering
- d. Fertilizing
- e. Mulching
  - 1. Types
  - 2. Benefits
- f. Equipment

INSTRUCTIONAL MATERIALS

Textbooks:

- a. Beard, Turfgrass: Science and Culture
- b. Conover, Grounds Maintenance Handbook
- c. Richardson, Working in Horticulture
- d. McDaniel, Ornamental Horticulture
- e. Ohio, Turf Management
- f. Equipment brochures from lawn equipment companies
- g. Georgia, Establishing a Lawn

A/Vs:

Vocational Education Productions, "Lawns and Groundcovers," sound filmstrip

Tools and Equipment:

- a. Seeds
- b. Sod
- c. Sprigs
- d. Plugs

(Continued on back)

LAB HOURS	11
CLASS HOURS	6

EVALUATION (EMT-03)

a. Given a specified grass seed, a well prepared seed bed, gravity and cyclone type seeders to choose from and other required equipment, the student will plant the specified seed. Seeder should be calibrated to deliver the prescribed amount of seed per acre. The seed should be evenly and uniformly distributed over the entire area.

b. Given a prepared area of lawn to be established, necessary tools and equipment and sufficient sod to cover the area, the student will lay the sod. The sod should be carefully laid joint to joint over the entire area to be sodded and rolled sufficiently to insure tightness of turf prior to the first irrigation.

c. Given a proper seed bed, springs of turfgrass, an area of lawn on which turf is to be established and the necessary tools and equipment, the student will plant the area with the sprigs. The sprigs should be either uniformly spaced and distributed in furrows over the entire area or cut into the soil by use of a disk and roller thereafter to insure good contact of the sprigs with the soil.

d. Given a proper seed bed, the required quantity of good sod for preparation of plugs, an area of lawn on which turf is to be established and the necessary tools and equipment, the student will prepare the required plugs and plant them. The plugs should be carefully laid in furrows at proper or preassigned intervals and adequately rolled following plugging operations to insure a firm set of the plugs and good root contact with the soil.

e. Given the necessary information and related instruction, the student will describe the procedure for planting a lawn by seeding, sodding, sprigging or plugging. Evaluation will be by written examination and based on criteria specified by the instructor.

INSTRUCTIONAL MATERIALS

Tools and Equipment:

e. Seeders
f. Rake
g. Roller
h. Water hose
i. Sprinkler
j. Shovel
k. Mulch

TASK

EMT-04 Irrigating turfgrass

PERFORMANCE OBJECTIVE

Irrigate turfgrass.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance of watering
b. Types of watering systems
c. Time and rate of application
d. Methods of watering

Provide Practical Application On:

Assigning each student an area of lawn to water over a period of time

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ortho, All About Lawns
b. McDaniel, Ornamental Horticulture
c. Richardson, Working in Horticulture

Tools and Equipment:

a. Water source
b. Hose
c. Sprinklers

LAB HOURS	6
CLASS HOURS	4

EVALUATION (EMT-04)

Given a lawn area and the necessary equipment and supplies, the student will water the lawn area over a designated period of time. The lawn area must be watered evenly throughout the lawn with the absence of dry spots or soggy areas.

TASK

EMT-05 Fertilizing turfgrass

PERFORMANCE OBJECTIVE

Fertilize turfgrass.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance of fertilizer and lime (review)
b. Measuring areas
c. When to apply
d. Determining amounts to apply
e. Methods of application
f. Application equipment
g. Fertilization requirements of different turfgrasses
h. Calibrating spreaders
i. Cleaning equipment

Provide Demonstration On:

Calculating the amount of fertilizer to apply and the method of application

Provide Practical Application On:

Having students calculate the fertilizer needs of a specified turfgrass area

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Richardson, Working in Horticulture
c. Georgia Cooperative Extension Service, Lawns in Georgia and Fertilization for Lawns

A/Vs:

Vocational Education Productions, "Lawns and Groundcovers," sound filmstrip

Tools and Equipment:

a. Fertilizer
b. Broadcast spreader
c. Drop spreader
d. Utility containers

LAB HOURS	6
CLASS HOURS	4

EVALUATION (EMT-05)

Given a turfgrass area, the necessary equipment and supplies, the student will fertilizer and lime the lawn area. The correct amount of fertilizer must be determined and applied evenly over the area.

TASK

EMT-06 Mowing grass

PERFORMANCE OBJECTIVE

Mow grass.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Importance of mowing
b. Determining and adjusting mowing height
c. Mowing techniques (directions and patterns)
d. Types of mowing equipment
    1. Reel
    2. Rotary
e. Operation and service of mowing equipment
f. Equipment safety
g. Edging and trimming
h. Grass clipping removal
i. Leaf removal

Provide Demonstration On:

Procedure for adjusting the mower and mowing a turf area

INSTRUCTIONAL MATERIALS

Textbooks:

a. Beard, Turfgrass: Science and Culture
b. McDaniel, Ornamental Horticulture
c. Equipment brochures from lawn equipment companies

A/Vs:

Vocational Education Productions, "Lawns and Groundcovers," sound filmstrip

Tools and Equipment:

a. Reel mower
b. Rotary mower

LAB HOURS

CLASS HOURS 2

EVALUATION (EMT-06)

Given the necessary information and related instruction, the student will describe the procedure for mowing a specified type of turfgrass (pattern, height, method). Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

EMT-07 Improving established turfgrass

PERFORMANCE OBJECTIVE

Improve established turfgrass.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Thatch build-up
b. Compaction
c. Leveling the turf surface
d. Renovating lawns
e. Equipment used in improving the established turfgrass
f. Operating equipment
g. Equipment safety

Provide Demonstration On:

Methods of improving established turfgrass

Provide Practical Application On:

Having students renovate a turfgrass area

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ortho, All About Lawns
b. Brooklyn Botanic Garden, The Home Lawn Handbook
c. McDaniel, Ornamental Horticulture
d. Equipment brochures from lawn and garden equipment companies

A/Vs:

Ohio, "Lawn Renovation and Reestablishment," slides

Tools and Equipment:

a. Thatch rake
b. Vertical mower
c. Lawn roller
d. Topdressing machine
e. Drag mat
f. Beaf rake
g. Aerating machine

LAB HOURS	6
CLASS HOURS	4

EVALUATION (EMT-08)

a. Given a compacted lawn area and an aerator, the student will aerate the soil within the area. Complete coverage will be evidenced by soil cores deposited uniformly over the area.

b. Given a designated turf area needing thatching, a verticutting machine and the necessary tools and equipment, the student will remove the thatch from the area. The verticutting must be done to a depth of two inches in two different directions (the second at a right angle to the first). The thatch accumulations must be completely removed and destroyed. A drag mat must be used on the entire area after verticutting to remove remaining debris.

c. Given an area of turf in need of renovation, the student will select the method of renovation and renovate the area. The renovation must be complete and the new turf must blend with the old turf.

d. Given the necessary information and related instruction, the student will describe the procedures for improving a designated area of turfgrass. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

EMT-08 Controlling lawn insects

PERFORMANCE OBJECTIVE

Control lawn insects.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Identifying lawn insects (review)
b. Selecting control measures
c. Determining application rates
d. Methods of application
e. Equipment and materials for controlling insects (review)
f. Pesticide safety (review)

Provide Demonstration On:

Selecting, mixing and applying a chemical for controlling an identified insect

Provide Practical Application On:

Having the student identify an insect and select, mix and apply the proper control

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Ortho, All About Lawns
c. Ohio, Turf Management
d. Vocational Education Productions, Insect Identification Manual
e. Georgia Cooperation Extension Service, Chinch Bug Control on Lawns and Mole Crickets and Their Control

Tools and Equipment:

a. Sprayer
b. Duster
c. Insecticide

LAB HOURS	4
CLASS HOURS	4

EVALUATION (EMT-08)

Given a group of insects or pictures of the insects, the student will identify the insects and describe the method of control for each insect with 80% accuracy.

TASK

EMT-09 Controlling lawn diseases

PERFORMANCE OBJECTIVE

Control lawn diseases.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Types of lawn diseases
b. Lawn grasses most affected
c. Control measures
d. Application equipment
    1. Sprayers
    2. Dusters

Provide Demonstration On:

Identifying disease problems in a lawn

Provide Practical Application On:

Having student look for lawns with disease problems

INSTRUCTIONAL MATERIALS

Textbooks:

a. McDaniel, Ornamental Horticulture
b. Ortho, All About Lawns
c. Ohio, Turf Management and Lawn Diseases in the Midwest
d. Georgia Cooperative Extension Service, Safe Use of Soil Fumigants, Brown Patch and Dollar Spot Disease of Lawns and Turf, Pythium Blight, Leafspots and Rust of Lawns and Turf and Minor Lawn Diseases and Problems

LAB HOURS

CLASS HOURS 8

EVALUATION (EMT-09)

a. Given a list of common turf grass diseases, the student will identify the control measures with 80% accuracy.

b. Given pictures of common turf grass diseases, the student will identify the diseases with 80% accuracy.

TASK

EMT-10 Controlling weeds in turfgrass

PERFORMANCE OBJECTIVE

Control weeds in turfgrass.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Identifying pest weeds
b. Selecting control measures
c. Determining application rates
d. Methods of application
e. Equipment and materials for controlling weeds
f. Herbicide safety

Provide Demonstration On:

Selecting, mixing and applying a chemical for controlling an identified weed

Provide Practical Application On:

Having the student locate and identify weeds and develop a control program

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia Cooperative Extension Service, Weed Control in Lawns and Weed Control in Centipede and St. Augustine Grass
b. Brooklyn Botanic Garden, Weed Control in the Home Garden
c. McDaniel, Ornamental Horticulture
d. Ohio, Turf Management and Lawn Weeds and Their Control

A/Vs:

Vocational Education Productions, "Lawns and Groundcovers," sound filmstrip

Tools and Equipment:

a. Sprayer
b. Herbicide (weed control)
    1. Liquid
    2. Granular
c. Drop spreader
d. Broadcast spreader

LAB HOURS	2
CLASS HOURS	4

EVALUATION (EMT-10)

a. Given a list of common lawn weeds, the student will identify the control measures with 80% accuracy.

b. Given pictures of common lawn weeds, the student will identify the weeds with 80% accuracy.

TASK

EMT-11 Maintaining golfgreens and fairways

PERFORMANCE OBJECTIVE

Maintain golfgreens and fairways.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Lawns vs golfgreens
b. Mowing
    1. Frequency
    2. Cutting height and direction
    3. Clipping removal
b. Fertilization
c. Irrigation
d. Pest control
e. Controlling compaction
f. Controlling thatch build-up
g. Relocating cups and tees
h. Winter overseeding
i. Repairing turf damage

INSTRUCTIONAL MATERIALS

Textbooks:

a. Beard, *Turfgrass: Science and Culture*
b. Conover, *Grounds Maintenance Handbook*
c. Florida State University, *Turfgrass Maintenance*
d. Georgia Cooperative Extension Service, *Managing Bermuda Greens*

LAB HOURS ☐

CLASS HOURS 10

EVALUATION (EMT-11)

Given the necessary information and related instruction, the student will describe the procedures for maintaining golfgreens and fairways. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

GP-01 Identifying house plants

PERFORMANCE OBJECTIVE

Identify house plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Scientific and common names
b. Identifying characteristics
    1. Growth habits
    2. Leaf shape
    3. Flowers
c. Types of house plants
    1. Flowering
    2. Foliage

Provide Practical Application On:

Taking student to a business specializing in house plants and have them practice identifying the plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ortho, House Plants, Indoors/Outdoors and The World of Cactus and Succulents
b. Merchants Publishing Company, Foliage Plants for Modern Living

A/Vs:

Vocational Education Productions, "Plant Identification," sound filmstrip

Tools and Equipment:

A variety of common house plants

LAB HOURS	16
CLASS HOURS	20

EVALUATION (GP-01)

Given a group of house plants or pictures of house plants, the student will identify at least 90% of the plants.

114

TASK

GP-02 Identifying cut flowers and flowering potted plants

PERFORMANCE OBJECTIVE

Identify cut flowers and flowering potted plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Scientific and common name
b. Varieties
c. Identifying characteristics
    1. Growth habits
    2. Leaf shape
    3. Flowers

Provide Practical Application On:

Taking students to a business specializing in cut flowers and flowering potted plants and have them practice identifying the plants

INSTRUCTIONAL MATERIALS

A/Vs:

Ohio, "Cut Flowers," slides and "Flowering Potted Plants," slides

LAB HOURS 6
CLASS HOURS 10

EVALUATION (GP-02)

Given a group of cut flower plants and potted flowering plants, the student will identify at least 90% of the plants.

TASK

MGS-01 Describing greenhouses and other plant growing structures

PERFORMANCE OBJECTIVE

Describe greenhouses and other plant growing structures.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Greenhouses
    1. Parts
    2. Styles (designs)
    3. Frame
    4. Coverings
b. Cold frames
c. Hot beds
d. Shade and lath houses
e. Benches
f. Headhouse

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ohio, Greenhouse Gardening
b. Richardson, Working in Horticulture
c. Ball, (Ed.), The Ball Red Book
d. Trans Sphere, Vocational Horticulture Building

A/Vs:

Ohio, "Greenhouses and Related Structures," slides

LAB HOURS	
CLASS HOURS	20

EVALUATION (MGS-01)

Given the necessary information and related instruction, the student will describe the purpose and use of greenhouses and other plant growing structures. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

MGS-02 Controlling the greenhouse environment

PERFORMANCE OBJECTIVE

Control the greenhouse environment.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Temperature Controls
b. Relative Humidity
c. Carbon dioxide levels
d. Air circulation
e. Light
    1. Intensity
    2. Duration
f. Watering systems
h. Heating systems
i. Cooling systems
j. Ventilating systems

Provide Demonstration On:

Greenhouse environment control systems by taking student to visit different greenhouse structures

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ohio, Greenhouse Gardening
b. Richardson, Working in Horticulture
c. Ball, (Ed.), The Ball Red Book
d. Acme, The Greenhouse Climate Control Handbook
e. Georgia Cooperative Extension Service, Greenhouse Heating, Cooling and Ventilation

A/Vs:

a. Ohio, "Greenhouse and Related Structures," slides
b. Vocational Education Productions, "Greenhouse Maintenance," sound filmstrip

LAB HOURS 6

CLASS HOURS 26

EVALUATION (MGS-02)

Given the necessary information and related instruction, the student will describe methods of controlling the greenhouse environment. Evaluation will be by written examination and based on criteria specified by the instructor.

TASK

MGS-03 Growing bedding plants

PERFORMANCE OBJECTIVE

Grow bedding plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Scheduling production
b. Transplanting
c. Preparing soil mixes
d. Watering
e. Fertilization
f. Controlling plant size and flowering
g. Pest and disease control
h. Preparing plants for market

Provide Practical Application On:

Having student grow out a group of bedding plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia Cooperative Extension Service, Commercial Bedding Plant Production in Georgia
b. Ohio, Greenhouse Gardening
c. Ball, (Ed.), The Ball Red Book
d. McDaniel, Ornamental Horticulture

A/Vs:

a. Vocational Education Productions, "Bedding Plant Production," sound filmstrip
b. Ohio, "Common Insects of Greenhouse Crops," slides; "Managing Plant Health in the Greenhouse," slides; "Diseases of Greenhouse Flower Crops," slides

LAB HOURS	8
CLASS HOURS	4

EVALUATION (MGS-03)

Given a flat of bedding plant seedlings and the necessary equipment and supplies, the student will grow the plants to market size. The plants must maintain normal growth and remain healthy.

TASK

MGS-04 Producing pot plants

PERFORMANCE OBJECTIVE

Produce pot plants.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Crop scheduling
b. Soil preparation
c. Pinching, disbuding
d. Potting (review)
e. Watering
f. Temperature control
g. Fertilization
h. Light requirements
i. Regulating growth
j. Controlling plant problems
k. Flowering plants
l. Foliage plants

Provide Practical Application On:

Having student grow potted plants to market size

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ohio, Greenhouse Gardening
b. Ball, (Ed.), The Ball Red Book
c. McDaniel, Ornamental Horticulture
d. Vocational Education Productions, Growing Container Plants

A/Vs:

Ohio, "Common Insects of Greenhouse Crops,: slides; "Managing Plant Health in the Greenhouse," slides; "Diseases of Greenhouse Flower Crops,: slides

Tools and Equipment:

a. Growing media
b. Pots (6" clay or plastic)
c. Plants to be potted
d. Growth chemicals
e. Greenhouse space
f. Black cloth
g. Time clock

LAB HOURS 8
CLASS HOURS 4

EVALUATION (MGS-04)

Given healthy plants to be grown as pot plants and the necessary equipment and supplies, the student will start the plants and control temperature, moisture and light to force the plants to flower on schedule. At least 90% of the plants must flower on schedule.

TASK

MGS-05 Forcing bulbs

PERFORMANCE OBJECTIVE

Force bulbs.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Crop scheduling
b. Regulation of height
c. Soil preparation
d. Propagation
e. Potting
f. Watering
g. Temperature control
h. Fertilization
i. Regulating growth
j. Pest and disease control
k. Preparing plants for market

Provide Practical Application On:

Having students force bulbs

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ohio, Greenhouse Gardening
b. Ball, (Ed.), The Ball Red Book
c. McDaniel, Ornamental Horticulture

A/Vs:

Ohio, "Common Insects of Greenhouse Crops," slides; "Managing Plant Health in the Greenhouse," slides; "Diseases of Greenhouse Flower Crops," slides

Tools and Equipment:

a. Pots (6" clay or plastic)
b. Growing media
c. Bulbs
d. Greenhouse space
e. Time clock
f. Black cloth
g. Refrigerator

LAB HOURS 2
CLASS HOURS 6

EVALUATION (MGS-05)

Given the necessary equipment and one or more types of Dutch bulbs which are to be forced to meet a prescribed time schedule, the student will control temperature, moisture and light to force bulbs and meet the required schedule. At least 90% of the bulbs must produce flowers on schedule.

TASK

MGS-06 Producing cut flowers

PERFORMANCE OBJECTIVE

Produce cut flowers.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Propagation and selection of cultivars
b. Growing schedules
c. Growing media and fertilizer programs
d. Light requirements
e. Temperature requirements
f. Pinching and/or disbudding
g. Recognizing problems
h. Marketing
i. Growth regulators

Provide Practical Application On:

Having student grow a crop of cut flowers

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ohio, Greenhouse Gardening
b. Ball, (Ed.), The Ball Red Book
c. McDaniel, Ornamental Horticulture

A/Vs:

a. Vocational Education Productions, "Care and Handling of Cut Flowers and Foliage," sound filmstrip

(Continued on back)

Tools and Equipment:

a. A section of greenhouse space without benches
b. Growing media
c. Rooted cuttings or bulbs
d. Growth regulator
e. Time clocks
f. Black cloth

LAB HOURS 10

CLASS HOURS 10

EVALUATION (MGS-06)

Given healthy plants or bulbs to be grown for cut flowers and the necessary equipment and supplies, the student will control temperature, moisture and light to force the plants to flower on a schedule. At least 90% of the plants must produce flowers on schedule.

INSTRUCTIONAL MATERIALS

A/Vs:

b. Ohio, "Common Insects of Greenhouse Crops," slides; "Managing Plant Health in the Greenhouse," slides; "Diseases of Greenhouse Flower Crops," slides

TASK

PL-01 Selecting landscape plants for balance and texture

PERFORMANCE OBJECTIVE

Select landscape plants for balance and texture.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Adaptability
b. Form/shape
c. Texture
d. Mature size
e. Growth rate
f. Color
g. Culture/maintenance
    1. Cultivation
    2. Moisture requirements/drainage
    3. Nutrient requirements
    4. Pruning
h. Landscape purpose
i. Unity
j. Emphasis
k. Balance
l. Proportion
m. Variety

Provide Demonstration On:

Observing the plants in several good landscape plantings pointing out how the plants are used to provide balance and pointing out the texture of the plants and observing some poor landscape plantings

Provide Practical Application On:

a. Having student critique some poor landscape plantings
b. Having student practice grouping plants for balance and texture

INSTRUCTIONAL MATERIALS

Textbooks:

a. Georgia, Landscape Plant Identification Keys
b. McDaniel, Ornamental Horticulture
c. Ingels, Landscaping Principles and Practices

LAB HOURS	6
CLASS HOURS	6

EVALUATION (PL-01)

Given a random list of landscape plants, the student will group the plants. The groups must provide balance and compatable texture based on criteria established by the instructor.

TASK

PL-02 Using non-plant materials and structures in a landscape

PERFORMANCE OBJECTIVE

Identify landscaping materials other than plants and describe their uses.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Asthetic properties of non-plant materials
b. Types of materials
    1. Rock
    2. Gravel
    3. Decorative mulches
    4. Wood timbers (cross ties, treated poles, etc.)
    5. Flagstones (concrete and rock)
c. Fences
d. Ponds and pools
e. Statuary

Demonstration of Task:

Taking students or having student visit areas where non-plant materials are used in the landscape

Provide Practical Application On:

Having students practice designing small areas in a landscape using non-plant materials

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ingels, Landscaping: Principles and Practices
b. Ortho, Garden Construction
c. Brooklyn Botanic Garden, Garden Structures
d. Vocational Education Productions, Landscape Construction
e. Georgia Cooperative Extension Service, Patios, Terraces and Decks and Edging Beds

LAB HOURS	6
CLASS HOURS	6

EVALUATION (PL-02)

Given a list or group of non-plant materials, the student will identify the materials and describe how they may be used in a landscape. Evaluation will be based on criteria specified by the instructor.

TASK

PL-03 Designing the landscape

PERFORMANCE OBJECTIVE

Develop landscape plans.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Basic drafting techniques
b. Landscape symbols
c. Site surveying
d. Basic areas
    1. Private
    2. Service
    3. Public
e. Placement of plant materials
f. Framing the house (corner plantings)
g. Background planting
h. Foundation planting
i. Shade
j. Specimen
k. Hedges

(Continued on back)

Provide Practical Application On:

Having student develop several landscape plans

INSTRUCTIONAL MATERIALS

Textbooks:

a. Ingels, Landscaping: Principles and Practices
b. Georgia Cooperative Extension Service, Planning Your Home Landscape; Design Ideas for Low Maintenance; Landscape Treatment for Small Public Places; Climate Control; Develop a Site Plan; Enclosure and Screening; Landscape Design for Mobile Homes; Foundation Plantings

(Continued on back)

Tools and Equipment:

a. Drawing board
b. Scale, architects
c. T-square
d. Pencils, 2 H and 4 H
e. Erasers
f. Landscape Templates
g. Triangles

LAB HOURS 54

CLASS HOURS 26

EVALUATION (PL-03)

a. Given a landscape site and the necessary equipment and supplies, the student will develop landscape plants for the site. The plan must consider existing structures and plants and give consideration to the basic areas of the landscape.

b. Ohio, Landscape Design, Test Questions.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

l. Grouping
m. Drainage features
n. Flower beds
o. Walks, driveways and other structures
p. Developing the plant list and code

INSTRUCTIONAL MATERIALS

Textbooks:

c. Ortho, All About Landscape
d. Ohio, Landscape Design and Landscape Drawing Techniques
e. Vocational Education Productions, Landscape Design

TASK

MHP-01 Marketing horticulture products

PERFORMANCE OBJECTIVE

Market horticulture products.

INSTRUCTIONAL ACTIVITIES

Provide Information On:

a. Salesmanship
b. Displays
c. Advertising
d. Promotions
e. Marketing nursery plants
f. Marketing bedding plants
g. Marketing pot plants
h. Marketing cut flowers

Demonstration of Task:

Having students visit several retail horticulture businesses

Provide Practical Application On:

a. Having student describe the marketing techniques observed during visits to retail businesses
b. Having student develop a marketing plan for different types of horticulture plants.
c. Emphasizing landscape plant and bedding plants

INSTRUCTIONAL MATERIALS

Textbooks:

a. Richardson, Working in Horticulture
b. Ohio, Marketing Agricultural Products; Agricultural Business Money Management; Agricultural Business Procedures and Records; Selling and Salesmenship for Agricultural Products; Advertising and Promotion of Agricultural Products; Business Principles of Landscape Service Organizations; Retail Floriculture, Book I. Sales, Service, and Promotion
c. Furuta, Environmental Plant Production and Marketing

LAB HOURS	10
CLASS HOURS	42

EVALUATION (MHP-01)

a. Given a type of retail horticulture plant business, the student will develop a marketing plan for the business. The plan must include advertising display, promotions, preferred location and daily maintenance of the plants.

b. Written examination: Evaluation will be based on criteria specified by the instructor.

SECTION IV

CURRICULUM STRUCTURE, EXIT POINTS & COURSE OUTLINE

SECTION IV

Section IV Content List

Introduction to the Curriculum Structure
Curriculum Structure
  Group
  Individualized
Introduction to Ornamental Horticulture Exit Points
Introduction to the Course Outline
Course Outline

Section III presented a sample organizational model for sequencing the instruction of program tasks. Based on that model, Section IV provides suggested methods of structuring the entire Ornamental Horticulture curriculum.

INTRODUCTION TO THE CURRICULUM STRUCTURE

A curriculum structure is developed by sequencing duties into a logical teaching plan. Two curriculum structures are presented in this section - group and individualized.

The individualized structure also lists the duty areas, but does not include hours or quarters. Using the individualized approach, the student proceeds at his or her pace until each task is mastered.

In either type of structure, the duty areas can be rearranged to meet local needs.

ORNAMENTAL HORTICULTURE SUGGESTED CURRICULUM STRUCTURE*

Course	Class Hours	Lab Hours	Total Hours
Quarter I			
ORIENTATION TO THE HORTICULTURE PROGRAM	13	0	13
HORTICULTURE SCIENCE	133	10	143
INSECT AND DISEASE CONTROL	36	16	52
	182	26	208
Quarter II			
ORNAMENTAL HORTICULTURE PLANTS	26	26	52
PROPAGATING PLANTS	30	22	52
GROWING LANDSCAPE PLANTS	13	13	26
PLANTING LANDSCAPE PLANTS	12	14	26
MAINTAINING LANDSCAPE PLANTS	28	24	52
	109	99	208
Quarter III			
ESTABLISHING AND MAINTAINING TURFGRASS	57	47	104
GREENHOUSE PLANTS	30	22	52
MANAGING THE GREENHOUSE AND RELATED STRUCTURES	46	6	52
	133	75	208
Quarter IV			
MANAGING THE GREENHOUSE AND RELATED STRUCTURES	24	28	52
PLANNING THE LANDSCAPE	38	66	104
MARKETING HORTICULTURE PRODUCTS	42	10	52
	104	104	208
Total Program Hours:	528	304	832

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*This curriculum structure is designed to be used for group instruction.

ORNAMENTAL HORTICULTURE SUGGESTED CURRICULUM STRUCTURE*

ORIENTATION TO THE HORTICULTURE PROGRAM

HORTICULTURE SCIENCE

INSECT AND DISEASE CONTROL

ORNAMENTAL HORTICULTURE PLANTS

PROPAGATING PLANTS

GROWING LANDSCAPE PLANTS

PLANTING LANDSCAPE PLANTS

MAINTAINING LANDSCAPE PLANTS

ESTABLISHING AND MAINTAINING TURFGRASS

GREENHOUSE PLANTS

MANAGING THE GREENHOUSE AND RELATED STRUCTURES

PLANNING THE LANDSCAPE

MARKETING HORTICULTURE PRODUCTS

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*This curriculum structure is designed to be used for individualized instruction.

INTRODUCTION TO ORNAMENTAL HORTICULTURE EXIT POINTS

The following diagrams illustrate points in the Ornamental Horticulture program where a student should have acquired competencies necessary for entry level employment.

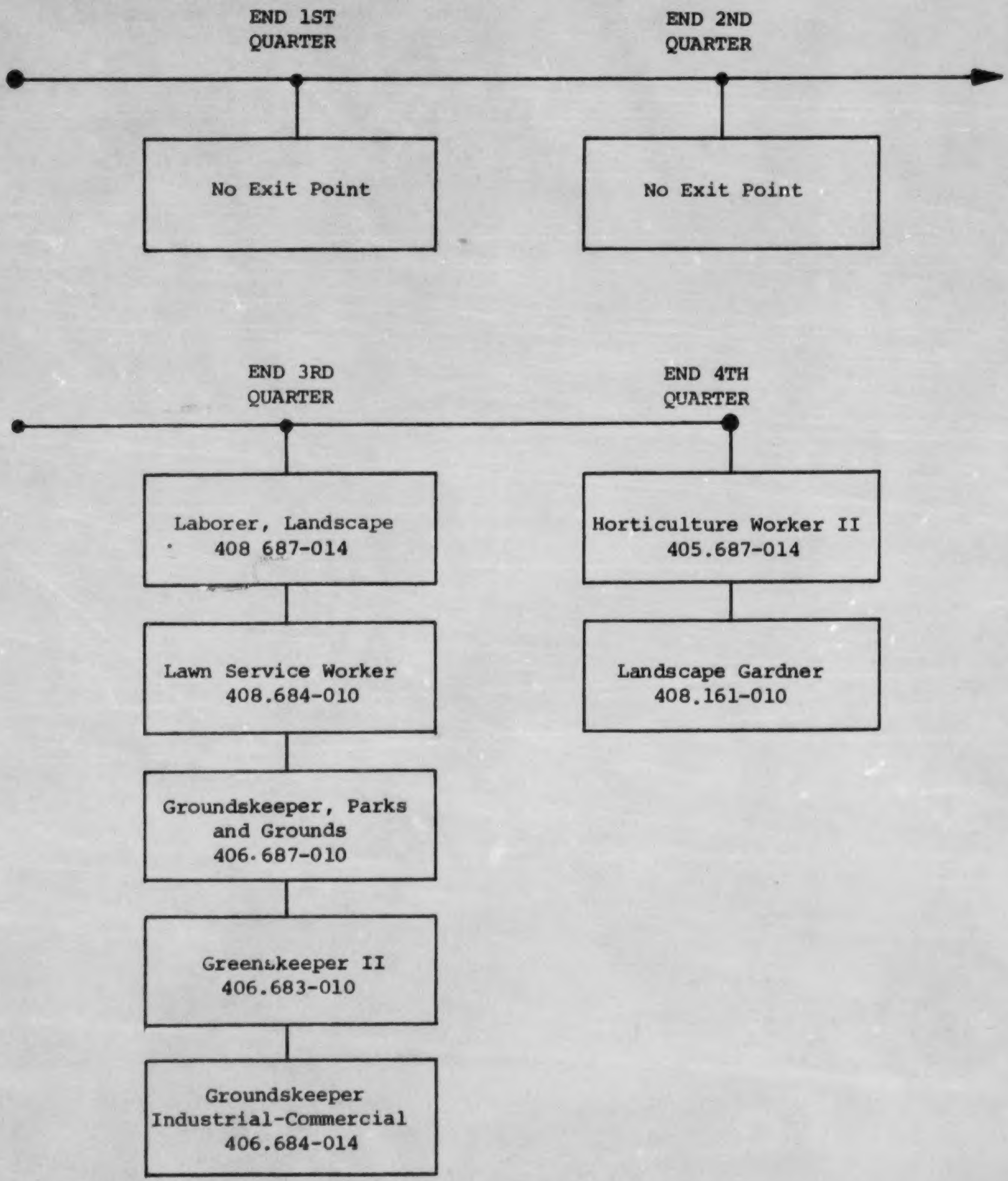
Both the group and individualized exit point diagrams sequence the Ornamental Horticulture job classifications from least to most difficult. The group exit point diagram illustrates a lock-step process in which students proceed through an entire program at the same pace and exit at approximately the same point in time.

The individualized exit point diagram illustrates a self-paced progression through the Ornamental Horticulture program. This approach permits a student to complete any one or all tasks necessary for entry level employment.

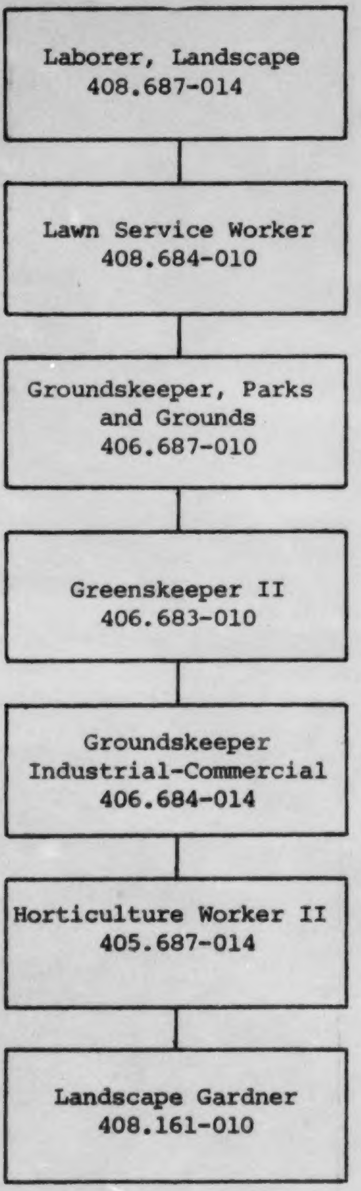
The major difference between the group and individualized approach is the number of tasks a student must master. For example, in the individualized approach, a student desiring employment as a greenhouse worker needs to complete only those tasks identified for that job. However, in the group approach, a student must master the tasks in the previous DOT classifications leading to that particular job title.

Both diagrams are based on the preceeding suggested curriculum structures.

ORNAMENTAL HORTICULTURE
(GROUP INSTRUCTION)


END 1ST QUARTER
END 2ND QUARTER
No Exit Point
No Exit Point
END 3RD QUARTER
END 4TH QUARTER
Laborer, Landscape 408 687-014
Horticulture Worker II 405.687-014
Lawn Service Worker 408.684-010
Landscape Gardner 408.161-010
Groundskeeper, Parks and Grounds 406.687-010
Greenskeeper II 406.683-010
Groundskeeper Industrial-Commercial 406.684-014

ORNAMENTAL HORTICULTURE
(INDIVIDUALIZED INSTRUCTION)


Laborer, Landscape
408.687-014
Lawn Service Worker
408.684-010
Groundskeeper, Parks and Grounds
406.687-010
Greenskeeper II
406.683-010
Groundskeeper Industrial-Commercial
406.684-014
Horticulture Worker II
405.687-014
Landscape Gardner
408.161-010

INTRODUCTION TO THE COURSE OUTLINE

A course outline suggests a method of sequencing tasks for instruction. In the following outline, the unit guide tasks are ordered according to duty areas. The tasks are then arranged from general to specific knowledge and applications. The instructor is not restricted to using this specific outline, but may adapt it to meet his or her teaching needs.

The following course outline is designed for group instruction, however, it may be adapted for individualized instruction by eliminating the time sequencing for tasks.
conferring the degree.

ORNAMENTAL HORITCULTURE SUGGESTED COURSE OUTLINE

Quarter I

Task	Title	Class Hours	Lab Hours
	DUTY I: ORIENTATION TO THE HORTICULTURE PROGRAM		
	Orienting students to school policies and procedures	1	0
OHP-01	Exploring careers in ornamental horticulture	12	0
		13	0
	DUTY II: HORTICULTURE SCIENCE		
HS-01	Identifying basic plant parts and their functions	52	0
HS-02	Describing the basic properties of soils	26	0
HS-03	Relating fertilizers to plant nutrient requirements	26	0
HS-04	Taking soil samples and performing soil tests	3	10
HS-05	Using pesticides and other chemicals safely	26	0
		133	10
	DUTY III: INSECT AND DISEASE CONTROL		
IDC-01	Controlling insects	16	10
IDC-02	Controlling plant diseases	20	6
		36	16
	Related Instruction		
	Basic Marketing Communications	52	0
	Basic Business Math	52	0
		104	0
	Total Quarter I Class and Lab Hours	286	26
	Total Quarter I Instructional Time	312	

Quarter II

Task	Title	Class Hours	Lab Hours
	DUTY I: ORNAMENTAL HORTICULTURE PLANTS		
HP-01	Identifying vines, groundcovers, shrubs and trees	20	18
HP-02	Identifying annual and perennial plants	6	8
		26	26
	DUTY II: PROPAGATING PLANTS		
PP-01	Propagating plants from seed	6	7
PP-02	Propagating plants from cuttings	16	10
PP-03	Propagating plants by grafting	8	5
		30	22
	DUTY III: GROWING LANDSCAPE PLANTS		
GLP-01	Potting bedding plants	2	4
GLP-02	Planting liner stock	3	3
GLP-03	Maintaining nursery container plants	8	6
		13	13
	DUTY IV: PLANTING LANDSCAPE PLANTS		
PLP-01	Planting vines, shrubs and trees	6	4
PLP-02	Planting groundcovers	2	3
PLP-03	Planting bedding plants	2	3
PLP-04	Planting bulbs	2	4
		12	14
	DUTY V: MAINTAINING LANDSCAPE PLANTS		
MLP-01	Watering plants	6	0
MLP-02	Fertilizing trees and shrubs	4	4
MLP-03	Pruning plants	8	10
MLP-04	Maintaining flower beds	2	4
MLP-05	Controlling insects and diseases of landscape plants	8	6
		28	24
	Related Instruction		
	Introduction to Marketing	52	0
	Basic Economics	52	0
		104	0
	Total Quarter II Class and Lab Hours	213	99
	Total Quarter II Instructional Time	312	

Quarter III

Task	Title	Class Hours	Lab Hours
	DUTY I: ESTABLISHING AND MAINTAINING TURFGRASS		
EMT-01	Selecting lawn grasses	6	4
EMT-02	Preparing the soil for a lawn	4	8
EMT-03	Planting the lawn	6	11
EMT-04	Irrigating turfgrass	4	6
EMT-05	Fertilizing turfgrass	4	6
EMT-06	Mowing grass	3	0
EMT-07	Improving established turfgrass	4	6
EMT-08	Controlling lawn insects	4	4
EMT-09	Controlling lawn diseases	8	0
EMT-10	Controlling weeds in turfgrass	4	2
EMT-11	Maintaining golf course greens and fairways	10	0
		57	47
	DUTY II: GREENHOUSE PLANTS		
GP-01	Identifying house plants	20	16
GP-02	Identifying cut flowers and flowering potted plants	10	6
		30	22
	DUTY III: MANAGING THE GREENHOUSE AND RELATED STRUCTURES		
MGS-01	Describing greenhouses and other plant growing structures	20	0
MGS-02	Controlling the greenhouse environment	26	6
		46	6
	Related Instruction		
	Advanced Business Math	52	0
	Principles of Business Law	52	0
		104	0
	Total Quarter III Class and Lab Hours	237	75

Total Quarter III Instructional Time 312

Quarter IV

Task	Title	Class Hours	Lab Hours
	DUTY I: MANAGING THE GREENHOUSE AND RELATED STRUCTURES		
MGS-03	Growing beddings plants	4	8
MGS-04	Producing pot plants	4	8
MGS-05	Forcing bulbs	6	2
MGS-06	Producing cut flowers	10	10
		24	28
	DUTY II: PLANNING THE LANDSCAPE		
PL-01	Selecting plants for balance and texture	6	6
PL-02	Using non-plant materials and structures in the landscape	6	6
PL-03	Designing the landscape	26	54
		38	66
MHP	Marketing Horticulture Products	42	10
	Practicum	0	104
	Total Quarter IV Class and Lab Hours	104	208
	Total Quarter IV Instructional Time	312	

SECTION V

RECORDS

SECTION V

Section V Content List

Individualized Competency Record
Group Progress Chart

Section V presents suggested ways of recording and documenting the progress of students through the curriculum. The recommended procedures include options for both individual and group records. The very important function of communicating the student's qualifications to potential employers is handled clearly and efficiently by the use of the Certificate of Competency, which is also described in this section.

RECORDS MANAGEMENT

This guide provides a series of easy to use documents that will aid the instructor in recordkeeping and that will be beneficial to the student in entering the work force.

In addition to providing the instructor with an "at a glance" assessment of individual and/or group progress, a Certificate of Competency, which can be used by students seeking employment, is included.

The group progress chart reflects individual task completion of all students. Due to confidentiality of records, grades must not be recorded on the chart. A notation indicating task completion (i.e., x or check) should be used.

INSTRUCTIONS

Instructions

Competency Checklist

1) Enter the student's name.
2) Enter the date and instructor's initials as each unit of instruction is completed.

The Competency Checklist automatically indicates when all the requirements for each DOT exit point or job title have been completed by the student. At each point on the certificate where an asterisk appears, the student is eligible to receive a Certificate of Competency.

Certificate of Competency

A Certificate of Competency is to be issued for each job title for which a student is qualified.

1) Enter the student's name.
2) Enter the school's name
3) Sign and date the form.

A Certificate of Competency may be issued at the time a student qualifies for it, or all certificates for which a student qualifies may be issued to the student when he/she completes or leaves the program.

Group Progress Chart

1) Enter all program tasks across top of matrix.
2) Enter the students' names down the left hand side of matrix.
3) As each student completes a task, a notation should be made in the square which corresponds with the task and the student's name.

COMPETENCY CHECKLIST

PROGRAM: ORNAMENTAL HORTICULTURE

STUDENT NAME:______________________________

EXIT POINTS

TASK NO.	UNIT COMPETENCIES	DATE	IN'T.	JOB TITLE	Landscape Gardener	Horticulture Worker II	Groundskeeper, Industrial-Commercial	Greenskeeper II	Groundskeeper, Parks and Grounds	Lawn-Service Worker	Laborer, Landscape
				DOT NO.	408.161-010	405.687-014	406.684-014	406.683-010	406.687-010	408.684-010	408.687-014
OMP-01	Exploring careers in ornamental horticulture				X	X	X	X	X	X	X
MS-01	Identifying basic plant parts and their functions				X	X	X	X	X		
MS-02	Describing the basic properties of soils				X	X	X	X	X		
MS-03	Relating fertilizer to plant nutrient requirements				X	X	X	X	X		
MS-04	Taking soil samples and performing soil tests				X	X	X	X	X		
MS-05	Using pesticides safely				X	X	X	X	X	X	X
IDC-01	Controlling insects				X	X	X	X	X	X	X
IDC-02	Controlling plant diseases				X	X	X	X	X		
HP-01	Identifying vines, groundcovers, shrubs and trees				X	X	X	X	X	X	X
HP-02	Identifying annuals and perennials used for landscaping				X	X	X	X	X	X	X
PP-01	Propagating plants from seed				X	X					
PP-02	Propagating ornamental plants by cuttings				X	X					
PP-03	Propagating plants by grafting				X	X					
GLP-01	Potting bedding plants				X	X					X
GLP-02	Planting a liner stock				X	X					X
GLP-03	Maintaining nursery plants				X	X					X
PLP-01	Planting vines, shrubs and trees				X	X	X	X	X	X	X
PLP-02	Planting groundcovers				X	X	X	X	X	X	X
PLP-03	Planting bedding plants				X	X	X	X	X	X	X
PLP-04	Planting bulbs				X	X	X	X	X	X	X
MLP-01	Watering plants				X	X	X	X	X	X	X
MLP-02	Fertilizing trees and shrubs				X	X	X	X	X	X	X
MLP-03	Pruning landscape plants				X	X	X	X	X	X	X
MLP-04	Maintaining flower beds				X	X	X	X	X	X	X
MLP-05	Controlling insects and diseases of landscape plants				X	X	X	X	X	X	
EMT-01	Selecting lawn grasses				X	X	X	X	X	X	
EMT-02	Preparing the soil for a lawn				X	X	X	X	X	X	X
EMT-03	Planting the lawn				X	X	X	X	X	X	X
EMT-04	Irrigating turfgrass				X	X	X	X	X	X	X
EMT-05	Fertilizing turfgrass				X	X	X	X	X	X	X
EMT-06	Mowing grass				X	X	X	X	X	X	X
EMT-07	Improving established turfgrass				X	X	X	X	X	X	*X
EMT-08	Controlling lawn insects				X	X	X	X	X	X	
EMT-09	Controlling lawn diseases				X	X	X	X	X	X	
EMT-10	Controlling weeds in turfgrass				X	X	*X	*X	X	X	
EMT-11	Maintaining golfgreens and fairways								*X	*X	
GP-01	Identifying house plants				X	X					
GP-02	Identifying cut flowers and flowering potted plants				X	X					
MGS-01	Describing greenhouses and other plant growing structures				X	X					
MGS-02	Controlling the greenhouse environment				X	X					
MGS-03	Growing bedding plants				X	X					
MGS-04	Producing pot plants				X	X					
MGS-05	Forcing bulbs				X	X					
MGS-06	Producing cut flowers				X	X					
PL-01	Selecting landscape plants for balance and texture				X	X					
PL-02	Using non-plant materials and structures in a landscape				X	*X					
PL-03	Designing the landscape				X						
MMP-01	Marketing horticulture products				*X						

This is to certify that the above named student has demonstrated proficiency in the performance of the competencies and/or tasks indicated above. These competencies and/or tasks have been determined to be the skills and knowledge that are necessary for entry level employment into the job classifications indicated.

Date______________________ Instructor________________________________
School________________________________
Instructor________________________________
Instructor________________________________
Instructor________________________________

*Certificate of Competency can be issued

V-9

CERTIFICATE OF COMPETENCY

This is to Certify that

Jamie Smith

SAMPLE

Pickens Are[illegible]cational Technical School

has successfully mastered the competencies required to perform the job of

GREENSKEEPER II

Frank M. Rowan

July 21, 1981

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Greenskeeper II.

GREENSKEEPER II
(D.O.T. Code 406.683-010)

Exploring careers in ornamental horticulture
Identifying basic plant parts and their functions
Describing the basic properties of soils
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower beds
Controlling insects and diseases of landscape plants
Selecting lawn grasses
Preparing the soil for a lawn
Planting the lawn
Irrigating turfgrass
Fertilizing turfgrass
Mowing grass
Improving established turfgrass
Controlling lawn insects
Controlling lawn diseases
Controlling weeds in turfgrass

CERTIFICATE OF COMPETENCY

This is to Certify that

____

of

____

has successfully mastered the competencies required to perform the job of

LABORER, LANDSCAPE

____

____

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Laborer, Landscape.

LABORER, LANDSCAPE
(D.O.T. Code 408.687-014)

Exploring careers in ornamental horticulture
Using pesticides safely
Controlling insects
Identifying vines, groundcovers, shrubs and trees
Identifying annuals and perennials used for landscaping
Potting bedding plants
Planting a liner stock
Maintaining nursery plants
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower beds
Preparing the soil for a lawn
Improving established turfgrass

CERTIFICATE OF COMPETENCY

This is to Certify that

____

of

____

has successfully mastered the competencies required to perform the job of

LAWN-SERVICE WORKER

____

____

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Lawn-Service Worker.

LAWN-SERVICE WORKER
(D.O.T. Code 408.684-010)

Exploring careers in ornamental horticulture
Using pesticides safely
Controlling insects
Identifying vines, groundcovers, shrubs and trees
Identifying annuals and perennials used for landscaping
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower bed
Controlling insects and diseases of landscape plants
Selecting lawn grasses
Preparing the soil for a lawn
Planting the lawn
Irrigating turfgrass
Mowing grass
Improving established turfgrass
Controlling lawn insects
Controlling lawn diseases
Controlling weeds in turfgrass
Maintaining golfgreens and fairways

V-15

CERTIFICATE OF COMPETENCY

This is to Certify that

____

of

____

has successfully mastered the competencies required to perform the job of

GROUNDSKEEPER, PARKS AND GROUNDS
____

____

____

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Groundskeeper, Parks and Grounds.

GROUNDSKEEPER, PARKS AND GROUNDS
(D.O.T. Code 406.687-010)

Exploring careers in ornamental horticulture
Identifying basic plant parts and their functions
Describing the basic properties of soils
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower beds
Controlling insects and diseases of landscape plants
Selecting lawn grasses
Preparing the soil for a lawn
Planting the lawn
Irrigating turfgrass
Fertilizing turfgrass
Mowing grass
Improving established turfgrass
Controlling lawn insects
Controlling lawn diseases
Controlling weeds in turfgrass
Maintaining golfgreens and fairways

CERTIFICATE OF COMPETENCY

This is to Certify that

____

of

____

has successfully mastered the competencies required to perform the job of

GROUNDSKEEPER, INDUSTRIAL-COMMERCIAL

____

____

V-17

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Groundskeeper, Industrial-Commercial.

GROUNDSKEEPER, INDUSTRIAL-COMMERCIAL
(D.O.T. Code 406.684-014)

Exploring careers in ornamental horticulture
Identifying basic plant parts and their functions
Describing the basic properties of soils
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower beds
Controlling insects and diseases of landscape plants
Selecting lawn grasses
Preparing the soil for a lawn
Planting the lawn
Irrigating turfgrass
Fertilizing turfgrass
Mowing grass
Improving established turfgrass
Controlling lawn insects
Controlling lawn diseases
Controlling weeds in turfgrass

CERTIFICATE OF COMPETENCY

This is to Certify that

____

of

____

has successfully mastered the competencies required to perform the job of

GREENSKEEPER II

____

____

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Greenskeeper II.

GREENSKEEPER II
(D.O.T. Code 406.683-010)

Exploring careers in ornamental horticulture
Identifying basic plant parts and their functions
Describing the basic properties of soils
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower beds
Controlling insects and diseases of landscape plants
Selecting lawn grasses
Preparing the soil for a lawn
Planting the lawn
Irrigating turfgrass
Fertilizing turfgrass
Mowing grass
Improving established turfgrass
Controlling lawn insects
Controlling lawn diseases
Controlling weeds in turfgrass

CERTIFICATE OF COMPETENCY

This is to Certify that

____

of

____

has successfully mastered the competencies required to perform the job of

HORTICULTURE WORKER II

____

____

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Horticulture Worker II.

HORTICULTURE WORKER II
(D.O.T. Code 405.687-014)

Exploring careers in ornamental horticulture
Identifying basic plant parts and their functions
Describing the basic properties of soils
Relating fertilizer to plant nutrient requirements
Taking soil samples and performing soil tests
Using pesticides safely
Controlling insects
Controlling plant diseases
Identifying vines, groundcovers, shrubs and trees
Identifying annuals and perennials used for landscaping
Propagating plants from seed
Propagating ornamental plants by cuttings
Propagating plants by grafting
Potting bedding plants
Planting a liner stock
Maintaining nursery plants
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower beds
Controlling insects and diseases of landscape plants
Selecting lawn grasses
Preparing the soil for a lawn
Planting the lawn
Irrigating turfgrass
Fertilizing turfgrass
Mowing grass
Improving established turfgrass
Controlling lawn insects
Controlling lawn diseases
Controlling weeds in turfgrass
Maintaining golfgreens and fairways
Identifying house plants
Identifying cut flowers and flowering potted plants
Describing greenhouses and other plant growing structures
Controlling the greenhouse environment
Growing bedding plants
Producing pot plants
Forcing bulbs
Producing cut flowers
Selecting landscape plants for balance and texture
Using non-plant materials and structures in a landscape

CERTIFICATE OF COMPETENCY

This is to Certify that

____

of

____

has successfully mastered the competencies required to perform the job of

LANDSCAPE GARDENER

____

____

The student named on this certificate has demonstrated mastery of the following unit level competencies required to perform the job of Landscape Gardner.

LANDSCAPE GARDENER
(D.O.T. Code 408.161-010)

Exploring careers in ornamental horticulture
Identifying basic plant parts and their functions
Describing the basic properties of soils
Relating fertilizer to plant nutrient requirements
Taking soil samples and performing soil tests
Using pesticides safely
Controlling insects
Controlling plant diseases
Identifying vines, groundcovers, shrubs and trees
Identifying annuals and perennials used for landscaping
Propagating plants from seed
Propagating ornamental plants by cuttings
Propagating plants by grafting
Potting bedding plants
Planting a liner stock
Maintaining nursery plants
Planting vines, shrubs and trees
Planting groundcovers
Planting bedding plants
Planting bulbs
Watering plants
Fertilizing trees and shrubs
Pruning landscape plants
Maintaining flower beds
Controlling insects and diseases of landscape plants
Selecting lawn grasses
Preparing the soil for a lawn
Planting the lawn
Irrigating turfgrass
Fertilizing turfgrass
Mowing grass
Improving established turfgrass
Controlling lawn insects
Controlling lawn diseases
Controlling weeds in turfgrass
Maintaining golfgreens and fairways
Identifying house plants
Identifying cut flowers and flowering potted plants
Describing greenhouses and other plant growing structures
Controlling the greenhouse environment
Growing bedding plants
Producing pot plants
Forcing bulbs
Producing cut flowers
Selecting landscape plants for balance and texture
Using non-plant materials and structures in a landscape
Designing the landscape
Marketing horticulture products

GROUP PROGRESS CHART

NAME	UNITS/TASKS																			

SECTION VI

FACILITIES

SECTION VI

Section VI Content List

Group Instruction Facilities
Individualized Instruction Facilities

The facility layouts on the following pages are presented to aid in arranging the classroom and laboratory for efficient instruction. The school administration and program instructor must determine an arrangement that best fits the needs of the students by determining the most efficient use of resources available to them not only in the laboratory, but also in the Learning Resource Center settings.

FACILITY LAYOUTS

The layouts on the following pages illustrate how facilities for group and individualized instructional programs may be planned and set up.

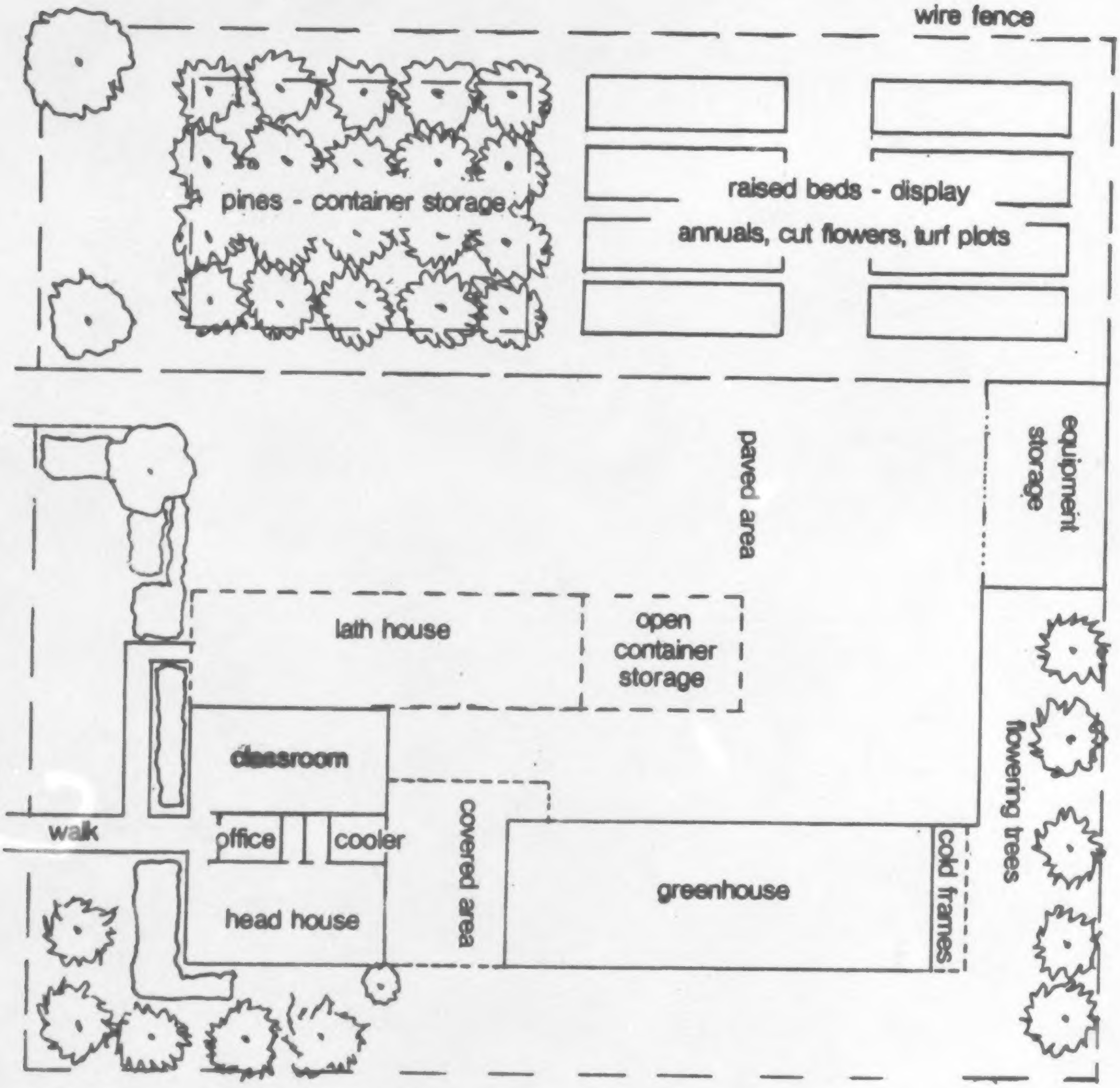
Each instructional approach has two important physical areas. These are (1) the laboratory (work) area and classroom for group instruction and (2) the laboratory (work) area and learning resource center (LRC) for individualized instruction.

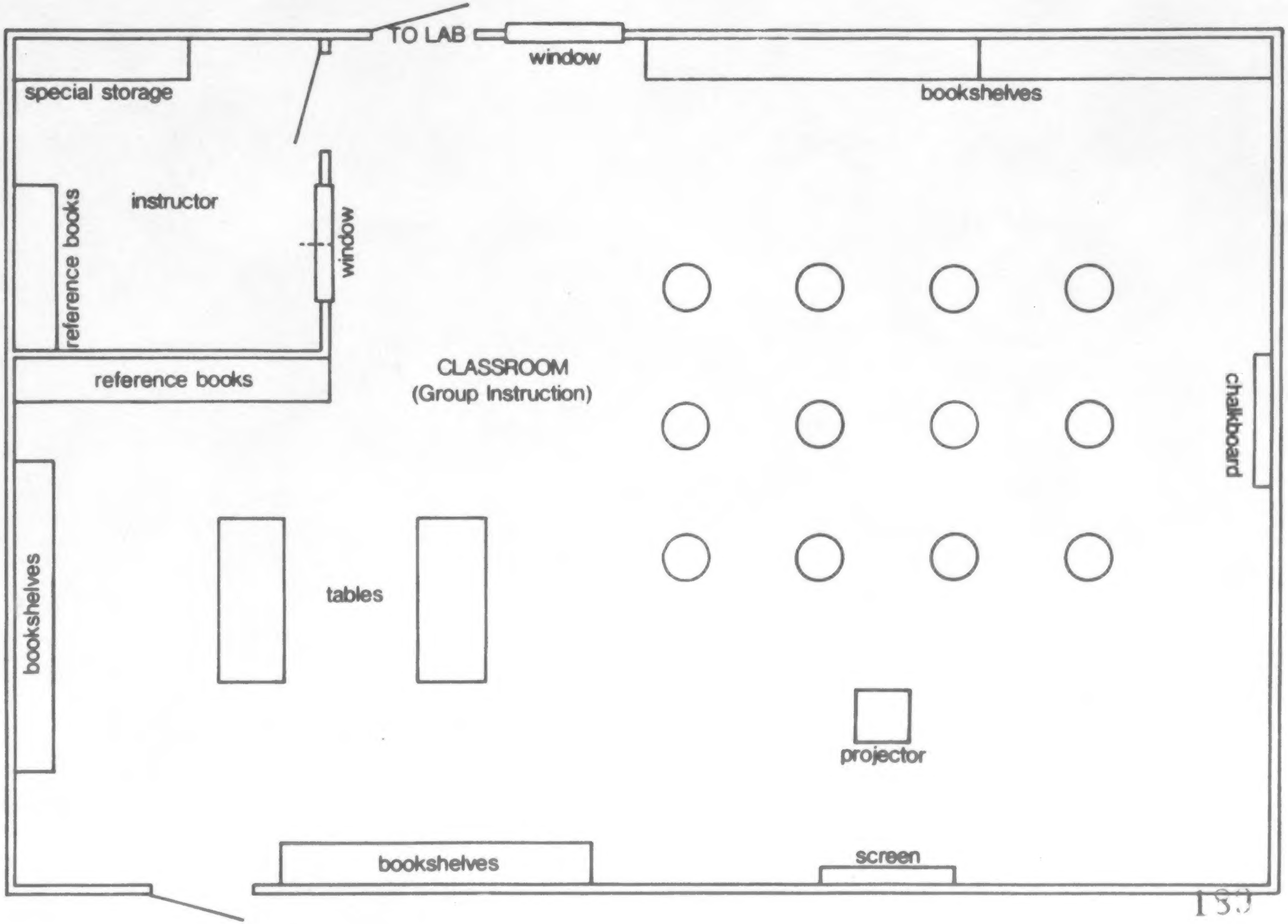
The instructional setting for group instruction is based on that of a traditional classroom. This approach is easily set up and includes little or no modifications. The primary modes of learning are instructor lectures, occasional use of audiovisual aids and student participation. Ideally, all students progress at the same pace.

The instructional setting for individual instruction is designed to facilitate a student self-paced progression of learning. The LRC requires careful planning in utilizing available space. When planning to install an individual instruction program in an area not originally designed for this approach, the instructional setting may need modifications. Desks may be replaced with study carrels to allow students to simultaneously participate in a variety of learning activities. A group session area for small group gatherings should also be included. Because the instructor and students rarely meet together as a group, a bulletin board becomes a vital communication device in an LRC. It can be used to post announcements and such instructional information as group progress charts, assignments, positions available in the industry and safety rules.

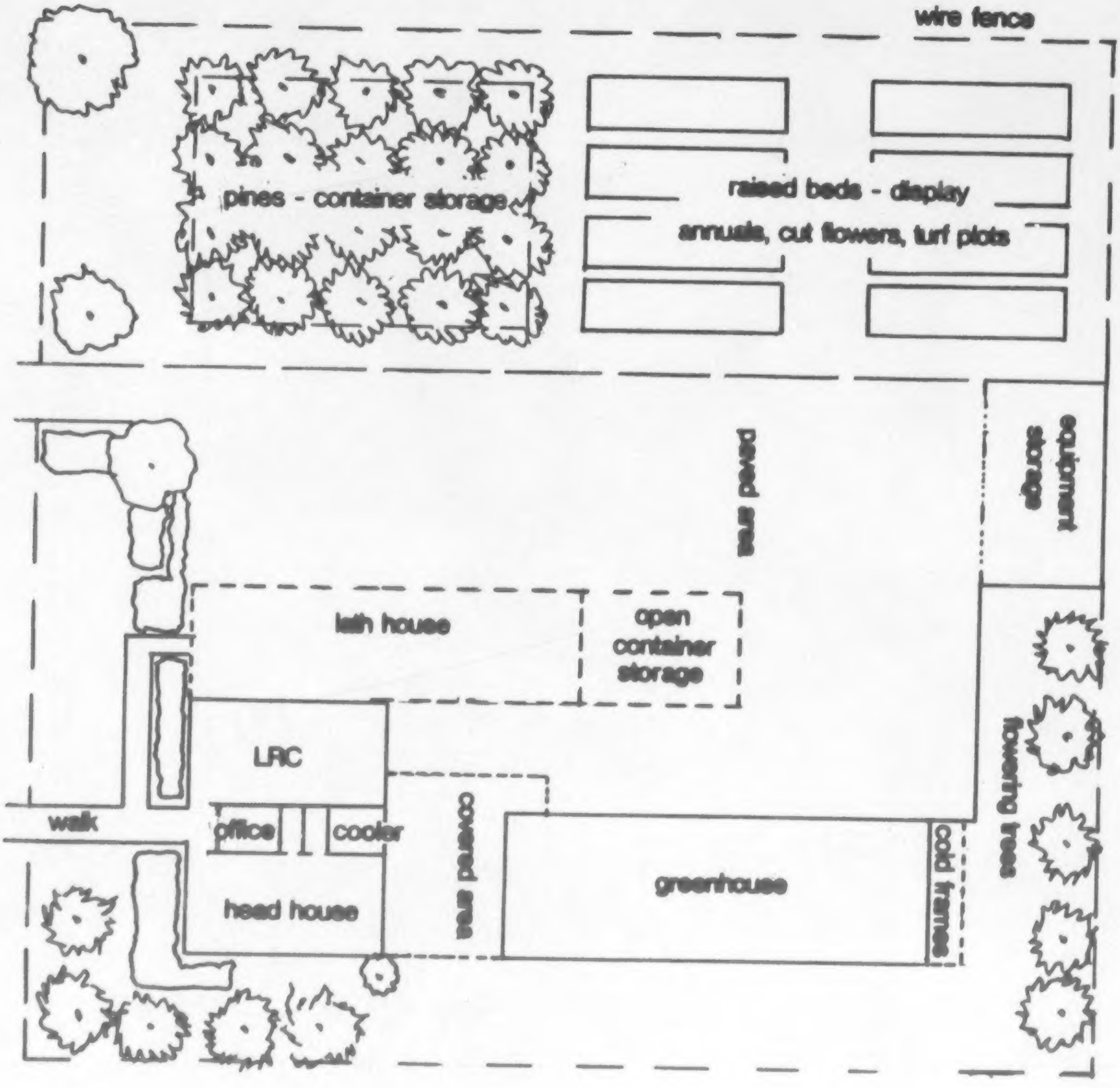
A variety of references, resources and media equipment should be made available to the student. Therefore, an adequate amount of storage area should be included in planning the LRC. Every specific school and department has unique physical layout characteristics and problems. Through innovation, these features may be transformed into LRC advantages rather than disadvantages.

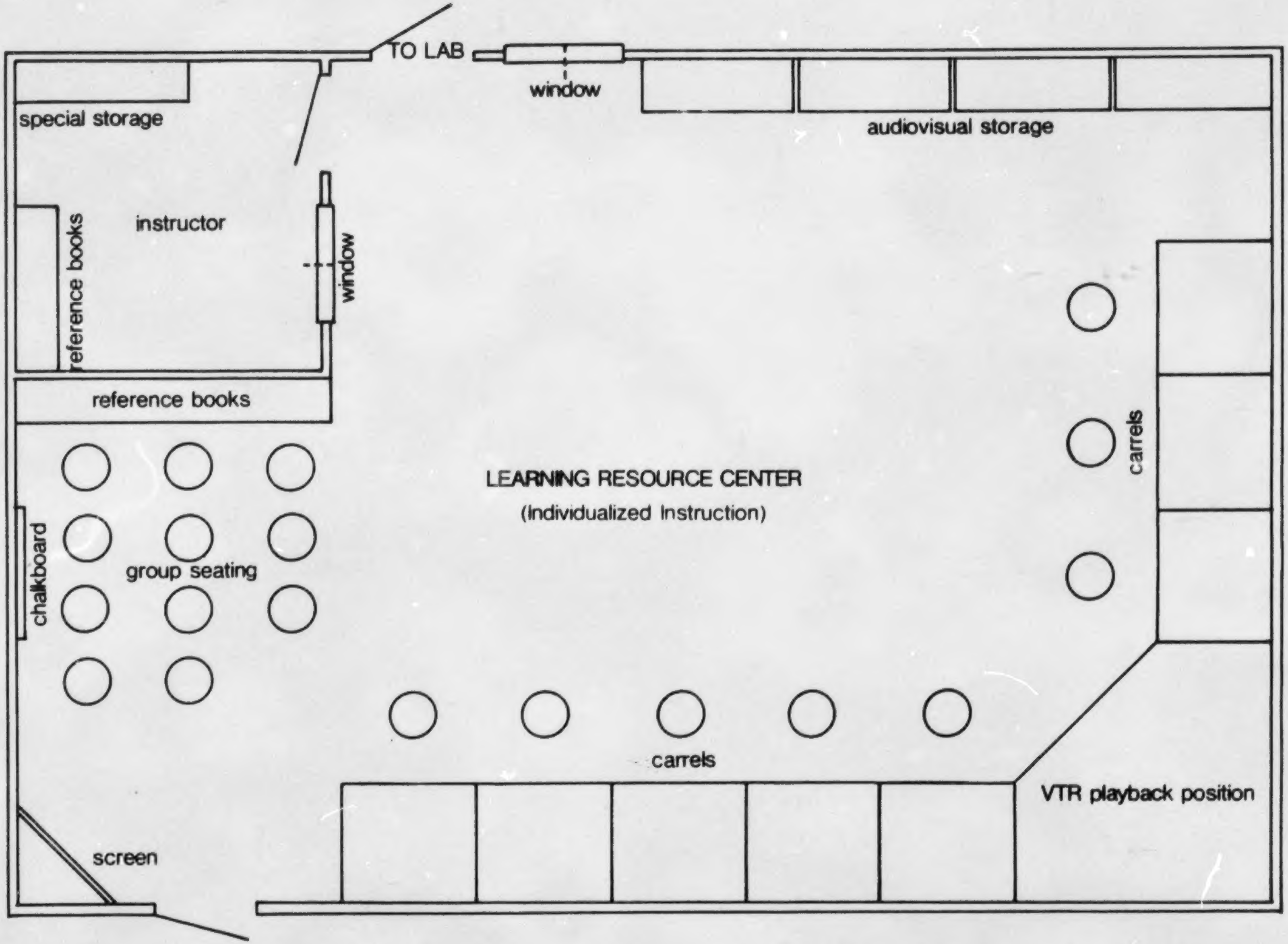
The manner in which the laboratory (work) area is planned and set up need not be affected by the type of instructional approach used by an instructor; it could/will be the same. Some major concerns in the laboratory are: 1) the instructor must always have a clear line of sight to each and every workstation, 2) tools must be accessible to students, but under the control of the instructor and 3) all supplies and materials required for the day's activities must be on hand and ready to use.


wire fence
pines - container storage
raised beds - display
annuals, cut flowers, turf plots
paved area
equipment storage
lath house
open container storage
classroom
walk
office
cooler
covered area
head house
greenhouse
cold frames
flowering trees


TO LAB
window
special storage
bookshelves
instructor
reference books
window
reference books
CLASSROOM
(Group Instruction)
chalkboard
bookshelves
tables
projector
bookshelves
screen

183


wire fence
pines - container storage
raised beds - display
annuals, cut flowers, turf plots
paved area
equipment storage
lath house
open container storage
LRC
walk
office
cooler
covered area
greenhouse
cold frames
head house
flowering trees


TO LAB
window
special storage
audiovisual storage
instructor
reference books
window
reference books
carrels
LEARNING RESOURCE CENTER
(Individualized Instruction)
chalkboard
group seating
carrels
VTR playback position
screen

APPENDIX A

Resources

RESOURCES

This appendix contains the instructional resource matrix, unit guide reference and additional instructional materials.

The instructional resource matrix lists the audiovisuals, textbooks and student manuals for each task referenced on the unit guide sheets. The audiovisual format is identified by the symbols such as: filmstrip (FS), slide/script (SS), slide/tape (ST), 16mm movie film (MF), transparency (TR), video tape (VT) and filmloop (FL). The producer, title and number of the A/V is also given.

The unit guide bibliography lists textbooks, audiovisuals, student manuals and evaluation materials cited in the unit guides section.

The additional instructional materials is a compilation of textbooks and audiovisuals not included in the unit guides but beneficial to educators.

Resources addresses for all references concludes this appendix.

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING		INSTRUCTIONAL MATERIAL REFERENCES		
		Audiovisuals	Textbooks	Student Materials
OHP-01	Exploring careers in ornamental horticulture	Vocational Education Productions: "Ornamental Horticulture" (FS)	Reiley and Shry: Introductory Horticulture; Richardson and Moore: Working in Horticulture; U.S. Department of Labor: Dictionary of Occupational Titles	
HS-01	Identifying basic plant parts and their functions		Richardson and Moore: Working in Horticulture; Reiley and Shry: Introductory Horticulture; Vocational Education Productions: Exercises in Biological Principles for Agricultural Crops; Ohio: The Nursery Worker, Part I; Any basic horticulture or botany textbooks	
HS-02	Describing the basic properties of soils	Ohio: "Soil and Its Properties" (ST); "Liming Acid Soils" (ST)	Richardson and Moore: Working in Horticulture; Reiley and Shry: Introductory Horticulture; Ortho: All About Fertilizer, Soils and Water; Ohio: The Nursery Worker, Part I; How Water Moves in Soil	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING		INSTRUCTIONAL MATERIAL REFERENCES		
		Audiovisuals	Textbooks	Student Materials
HS-03	Relating fertilizer to plant nutrient requirements	Ohio: "Liming Acid Soils" (ST)	Richardson and Moore: Working in Horticulture; Reiley and Shry: Introductory Horticulture; Ortho: All About Fertilizers, Soils and Water; Vocational Education Productions: Experiments in Soil Science; Ohio: The Nursery Worker, Part I	
HS-04	Taking soil samples and performing soil tests		Beard: Turfgrass: Science and Culture; Richardson: Working in Horticulture; Georgia Cooperative Extension Service: Soil Testing	
HS-05	Using pesticides safely	AAVIM: "Applying Pesticides" (ST)	AAVIM: Applying Pesticides	AAVIM: Applying Pesticides
IDC-01	Controlling insects		McDaniel: Ornamental Horticulture; Clemson University Extension Service: Insects and Diseases of Ornamentals; Richardson: Working in Horticulture; Ortho: All About Lawns; Vocational Education Productions: Insect Identification Manual	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
IDC-02 Controlling plant diseases		McDaniel: Ornamental Horticulture; Clemson University Extension Service: Insects and Diseases of Ornamentals; Richardson: Working in Horticulture; Ortho: All About Lawns; Forsberg: Diseases of Ornamental Plants	
HP-01 Identifying vines, groundcovers, shrubs and trees		Georgia Cooperative Extension Service: Landscape Plant Materials for Georgia; Georgia: Landscape Plant Identification and Landscape Plant Identification Keys	Georgia: Landscape Plant Identification, PLACE Package
HP-02 Identifying annuals and perennials used for landscaping	Ohio: "Annuals" (ST); "Perennials" (ST)	Ortho: Gardening with Color; Georgia Cooperative Extension Service: Annual Flowers	
PP-01 Propagating plants from seed	Vocational Education Productions: "Bedding Plant Production" (FS)	McDaniel: Ornamental Horticulture; Georgia: Introduction to Plant Propagation; Procuring Bedding Plant Seed; Germinating Bedding Plant Seed; Transplanting Seedlings; Ohio: Tips on Growing Bedding Plants, The Nursery Worker, Part II; Brooklyn Botanic Garden: Handbook on Propagation	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING		INSTRUCTIONAL MATERIAL REFERENCES		
		Audiovisuals	Textbooks	Student Materials
PP-02	Propagating ornamental plants by cuttings	Vocational Education Productions: "Propagating Ornamental Plants" (FS)	Georgia Cooperative Extension Service: Propagating Shrubs from Cuttings; Richardson: Working in Horticulture; McDaniel: Ornamental Horticulture; Ohio: The Nursery Worker, Part II; Vocational Education Productions: Nursery Practices	
PP-03	Propagating plants by grafting	Vocational Education Productions: "Budding and Grafting" (FS); "Propagating Ornamental Plants" (FS)	Georgia Cooperative Extension Service: Grafting Camellias; Richardson: Working in Horticulture; McDaniel: Ornamental Horticulture; Brooklyn Botanic Garden: Handbook on Propagation; Ohio: The Nursery Worker, Part II	
GLP-01	Potting bedding plants	Vocational Education Productions: "Bedding Plant Production" (FS)	Georgia: Procuring Containers for Greenhouse Plants; Richardson: Working in Horticulture; Georgia Cooperative Extension Service: Artificial Soil Mixes; Ohio: Tips on Growing Bedding Plants; McDaniel: Ornamental Horticulture	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
GLP-02 Planting a liner stock	Vocational Education Productions: "Growing Media for Ornamental Plants" (FS)	Georgia Cooperative Extension Service: Transplanting Seedling Trees; Ohio: The Nursery Worker, Part II; McDaniel: Ornamental Horticulture; American Association of Nurserymen, Inc.: American Standard for Nursery Stock	
GLP-03 Maintaining nursery plants		McDaniel: Ornamental Horticulture; Georgia Cooperative Extension Service: Disease Free Nursery Stock Production; The Effect of Soil Aeration and Drainage on the Root Growth of Ornamentals; Vocational Education Productions: Growing Container Plants; Dickey: Container Growing	
PLP-01 Planting vines, shrubs and trees		McDaniel: Ornamental Horticulture; Richardson: Working in Horticulture; Georgia Cooperative Extension Service: Planting Shrubs; Tree Planting Procedures; Spacing Plant Materials-Shrubs; Spacing Plant Materials-Trees; Georgia: Planting Shrubs and Trees	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
PLP-02 Planting groundcovers		McDaniel: Ornamental Horticulture; Georgia Cooperative Extension Service: Groundcovers; Spacing Plant Materials-Groundcovers	
PLP-03 Planting bedding plants		Reiley: Introductory Horticulture; Ortho: Gardening with Color; Georgia Cooperative Extension Service: Edging Beds	
PLP-04 Planting bulbs		Brooklyn Botanic Garden: Handbook on Bulbs; Richardson: Working in Horticulture	
MLP-01 Watering plants		Conover: Grounds Maintenance Handbook; Richardson: Working in Horticulture; Ortho: All About Fertilizers, Soils and Water	
MLP-02 Fertilizing trees and shrubs	Vocational Education Productions: "Fertilizing Ornamental Plants" (FS)	Georgia Cooperative Extension Service: Fertilizing Ornamental Plants; Fertilizing Shrubs; McDaniel: Ornamental Horticulture	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
MLP-03 Pruning landscape plants	Vocational Education Productions: "Elements of Pruning" (FS)	Sunset: Pruning Handbook; McDaniel: Ornamental Horticulture; Richardson: Working in Horticulture; Brooklyn Botanic Garden: Pruning Handbook; Georgia Cooperative Extension Service: Pruning Shade Trees; Pruning Ornamental Shrubs; Pruning Overgrown Shrubs	Georgia: Pruning, PLACE package
MLP-04 Maintaining flower beds		Reiley: Introductory Horticulture; Georgia Cooperative Extension Service: Mulching Ornamentals; Ortho: Gardening with Color	
MLP-05 Controlling insects and diseases of landscape plants		McDaniel: Ornamental Horticulture; Clemson University Cooperative Extension Service: Insects and Diseases of Ornamentals; Richardson: Working Horticulture; Georgia Cooperative Extension Service: Lace Bugs; Bugworms and Their Control; Aphids on Ornamental Plants; Control of Some Common Pests of Ornamental Plants; Dogwood Borers; Control Insects and Mites on Roses	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
EMT-01 Selecting lawn grasses		Ortho: All About Lawns; Georgia Cooperative Extension Service: Lawns in Georgia; Fescue Lawns; Centipede Lawns; Beard: Turfgrass: Science and Culture; Sunset: Lawns and Ground-Covers; Georgia: Establishing a Lawn	
EMT-02 Preparing the soil for a lawn		Ortho: All About Lawns; McDaniel: Ornamental Horticulture; Richardson: Working in Horticulture; Georgia Cooperative Extension Service: Soil Preparation in the Landscape; Ohio: Turf Management; Equipment brochures from lawn equipment companies; Georgia: Establishing a Lawn	
EMT-03 Planting the lawn	Vocational Education Productions: "Lawns and Groundcovers" (FS)	Beard: Turfgrass: Science and Culture; Conover: Grounds Maintenance Handbook; Richardson: Working in Horticulture; McDaniel: Ornamental Horticulture; Ohio: Turf Management; Equipment brochures from lawn equipment companies; Georgia: Establishing a Lawn	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
EMT-04 Irrigating turfgrass		Ortho: All About Lawns; McDaniel: Ornamental Horticulture; Richardson: Working in Horticulture	
EMT-05 Fertilizing turfgrass	Vocational Education Productions: "Lawns and Groundcovers" (FS)	McDaniel: Ornamental Horticulture; Richardson: Working in Horticulture; Georgia Cooperative Extension Service: Lawns in Georgia and Fertilization for Lawns	
EMT-06 Mowing grass	Vocational Education Productions: "Lawns and Groundcovers" (FS)	Beard: Turfgrass: Science and Culture; McDaniel: Ornamental Horticulture; Equipment brochures from lawn equipment companies	
EMT-07 Improving established turfgrass	Ohio: "Lawn Renovation and Reestablishment" (ST)	Ortho: All About Lawns; Brooklyn Botanic Garden: The Home Lawn Handbook; McDaniel: Ornamental Horticulture; Equipment brochures from lawn and garden equipment companies	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
EMT-08 Controlling lawn insects		McDaniel: Ornamental Horticulture; Ortho: All About Lawns; Ohio: Turf Management; Vocational Education Productions: Insect Identification Manual; Georgia Cooperative Extension Service: Chinch Bug Control on Lawns; Mole Crickets and Their Control	
EMT-09 Controlling lawn diseases		McDaniel: Ornamental Horticulture; Ortho: All About Lawns; Ohio: Turf Management and Lawn Diseases in the Midwest; Georgia Cooperative Extension Service: Safe Use of Soil Fumigants, Brown Patch and Dollar Spot Disease of Lawns and Turf, Pythium Blight, Leafspots and Rust of Lawns; Turf and Minor Lawn Diseases and Problems	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING		INSTRUCTIONAL MATERIAL REFERENCES		
		Audiovisuals	Textbooks	Student Materials
EMT-10	Controlling weeds in turfgrass	Vocational Education Productions: "Lawns and Groundcovers" (FS)	Georgia Cooperative Extension Service: Weed Control in Lawns and Weed Control in Centipede and St. Augustine Grass; Brooklyn Botanic Garden: Weed Control in the Home Garden; McDaniel: Ornamental Horticulture; Ohio: Turf Management and Lawn Weeds and Their Control	
EMT-11	Maintaining golf-greens and fairways		Beard: Turfgrass: Science and Culture; Conover: Grounds Maintenance Handbook; Florida State University: Turfgrass Maintenance; Georgia Cooperative Extension Service: Managing Bermuda Greens	
GP-01	Identifying house plants	Vocational Education Productions: "Plant Identification" (FS)	Ortho: House Plants, Indoors/Outdoors and The World of Cactus and Succulents; Merchants Publishing Company: Foliage Plants for Modern Living	
GP-02	Identifying cut flowers and flowering potted plants	Ohio: "Cut Flowers" (ST); "Flowering Potted Plants" (ST)		

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
MGS-01 Describing greenhouses and other plant growing structures	Ohio: "Greenhouses and Related Structures" (ST)	Ohio: Greenhouse Gardening; Richardson: Working in Horticulture; Ball: (Ed.): The Ball Red Book; Trans Sphere: Vocational Horticulture Building	
MGS-02 Controlling the greenhouse environment	Ohio: "Greenhouse and Related Structures" (ST); Vocational Education Productions: "Greenhouse Heating, Cooling and Ventilation" (FS)	Ohio: Greenhouse Gardening; Richardson: Working in Horticulture; Ball; (Ed.) The Ball Red Book; Acme: The Greenhouse Climate Control Handbook; Georgia Cooperative Extension Service: Greenhouse Heating, Cooling and Ventilation	
MGS-03 Growing bedding plants	Vocational Education Productions: "Bedding Plant Production" (FS); Ohio: "Common Insects of Greenhouse Crops" (ST); "Managing Plant Health in the Greenhouse" (ST); "Diseases of Greenhouse Flower Crops" (ST)	Georgia Cooperative Extension Service: Commercial Bedding Plant Production in Georgia; Ohio: Greenhouse Gardening; Ball; (Ed.): The Ball Red Book; McDaniel: Ornamental Horticulture	
MGS-04 Producing pot plants	Ohio: "Common Insects of Greenhouse Crops" (ST); "Managing Plant Health in the Greenhouse" (ST); "Diseases of Greenhouse Flower Crops" (ST)	Ohio: Greenhouse Gardening; Ball, (Ed.): The Ball Red Book; McDaniel: Ornamental Horticulture; Vocational Education Productions: Growing Container Plants	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING		INSTRUCTIONAL MATERIAL REFERENCES		
		Audiovisuals	Textbooks	Student Materials
MGS-05	Forcing bulbs	Ohio: "Common Insects of Greenhouse Crops" (ST); "Managing Plant Health in the Greenhouse" (ST); "Diseases of Greenhouse Flower Crops" (ST)	Ohio: Greenhouse Gardening; Ball, (Ed.): The Ball Red Book; McDaniel: Ornamental Horticulture	
MGS-06	Producing cut flowers	Vocational Education Productions: "Care and Handling of Cut Flowers and Foliage" (ES); Ohio: "Common Insects of Greenhouse Crops" (ST); "Managing Plant Health in the Greenhouse" (ST); "Diseases of Greenhouse Flower Crops" (ST)	Ohio: Greenhouse Gardening; Ball, (ed): The Ball Red Book; McDaniel: Ornamental Horticulture	
PL-01	Selecting landscape plants for balance and texture		Georgia: Landscape Plant Identification Keys; McDaniel: Ornamental Horticulture; Ingels: Landscaping Principles and Practices	
PL-02	Using non-plant materials and structures in a landscape		Ingels: Landscaping: Principles and Practices; Ortho: Garden Construction; Brooklyn Botanic Garden: Garden Structures; Vocational Education Productions: Landscape Construction; Georgia Cooperative Extension Service: Patios, Terraces and Decks; Edging Beds	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
PL-03 Designing the landscape		Ingels: Landscaping: Principles and Practices; Georgia Cooperative Extension Service: Planning Your Home Landscape; Design Ideas for Low Maintenance; Landscape Treatment for Small Public Places; Climate Control; Develop a Site Plan; Enclosure and Screening; Landscape Design for Mobile Homes; Foundation Plantings; Ortho: All About Landscape; Ohio: Landscape Design and Landscape Drawing Techniques; Vocational Education Productions: Landscape Design	
MHP-01 Marketing horticulture products		Richardson: Working in Horticulture; Ohio: Marketing Agricultural Products; Agricultural Business Money Management; Agricultural Business Procedures and Records; Selling and Salesmenship for Agricultural Products; Advertising and Promotion of Agricultural Products; Business Principles of Landscape Service Organizations; Retail Floriculture, Book I. Sales, Service, and Promotion (Continued on back)	

CURRICULUM AREA: ORNAMENTAL HORTICULTURE

TASK LISTING	INSTRUCTIONAL MATERIAL REFERENCES		
	Audiovisuals	Textbooks	Student Materials
		Furuta: Environmental Plant Production and Marketing	

TEXTBOOKS

Advertising and Promotion of Agricultural Products. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1976.

Agricultural Business Money Management. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1976.

Agricultural Business Procedures and Records. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1976.

American Standard for Nursery Stock. Washington, DC: American Association of Nurserymen, 1973.

Applying Pesticides. Athens, GA: American Association for Vocational Instructional Materials, 1976.

Ball, Vic (Ed.), The Ball Red Book (13th ed.). West Chicago, IL: George J. Ball, Inc., 1975.

Beard, James B., Turfgrass: Science and Culture. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1973.

Brooklyn Botanic Garden, Illustrated Garden and Horticultural Handbooks. Brooklyn, New York.
  Handbook on Propagation, 1976 (#24)
  Pruning Handbook, 1975 (#28)
  Handbook on Bulbs, 1975 (#31)
  Garden Structures, 1976 (#45)
  The Home Lawn Handbook, 1974 (#71)
  Weed Control in Home Garden, 1975 (#73)

Business Principles of Landscape Service Organizations. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1972.

Conover, Herbert S., Grounds Maintenance Handbook (3rd ed.). New York, NY: McGraw-Hill Book Company, 1977.

Dickey, R. D., McElwee, E. W., Conover, C. A. and Joiner, J. N., Container Growing of Woody Ornamental Nursery Plants in Florida. Gainesville, FL: University of Florida, 1978.

Dictionary of Occupational Titles (4th ed.). Washington, DC: United States Department of Labor, 1977.

Establishing a Lawn. Athens, GA: VEMC, 1980.

Exercises in Biological Principles for Agricultural Crops. San Luis Obispo, CA: Vocation Education Productions, California State Polytechnic University.

Experiments in Soil Science. San Luis Obispo, CA: Vocation Education Productions, California State Polytechnic University.

Foliage Plants for Modern Living. Kalamazoo, MI: Merchants Publishing Company, 1974.

Forsberg, Junius L., Diseases of Ornamental Plants. Urbana, IL: Vocational Agriculture Service, 1975.

Furuta, Tokuji, Environmental Plant Product and Marketing (2nd ed.). Arcadia, CA: Cox Publishing Company, 1976.

Georgia, Cooperative Extension Service Publications Catalog, 1980.

- Fertilizing Ornamental Plants (B-691)
- Fertilization for Lawns (B-710)
- Soil Testing (L-99)
- Fertilizing Shrubs (L-101)
- Weed Control In Lawns (B-678)
- Fertilization for Lawns (B-710)
- Lawns in Georgia (B-773)
- Weed Control in Centipede and St. Augustinegrass (B-806)
- Brown Patch and Dollar Spot Diseases of Lawns and Turf (L-16)
- Chinch Bug Control on Lawns (L-20)
- Minor Lawn Diseases and Problems (L-138)
- Managing Bermuda Greens (L-142)
- Fescue Lawns (L-145)
- Centipede Lawns (L-313)
- Landscape Plant Materials for Georgia (B-625)
- Planning Your Home Landscape (B-673)
- Landscape Design for Mobile Homes (B-708)
- Patios, Terraces and Decks (B-750)
- Enclosure and Screening (L-120)
- Design Ideas for Low Maintenance (L-122)
- Develop a Site Plan (L-124)
- Spacing Plant Materials - Groundcovers (L-127)
- Spacing Plant Materials - Shrubs (L-134)
- Spacing Plant Materials - Trees (L-135)
- Climate Control (L-169)
- Edging Beds (L-203)
- Landscape Treatment for Small Public Spaces (L-299)
- Foundation Planting (L-303)
- Propagating Shrubs from Cuttings (B-641)
- Grafting Camellias (B-681)
- Fertilizing Ornamental Plants (B-691)
- Disease-Free Nursery Stock Production (B-728)
- Commercial Bedding Plant Production in Georgia (B-752)
- The Effects of Soil Aeration and Drainage on the Roots Growth of Ornamentals (B-774)
- Greenhouse Heating, Cooling and Ventilation (B-792)
- Pruning Ornamental Shrubs (C-482)
- Soil Preparation in the Landscape (C-708)

Lace Bugs (L-21)
Bagworms and Their Control (L-22)
Aphids on Ornamental Plants (L-31)
Control of Some Common Pests of Ornamental Plants (L-46)
Control Insects and Mites on Roses (L-65)
Diagnosis of Growth Difficulties of Ornamentals (L-74)
Camellia Insect Control (L-79)
Annual Flowers (L-97)
Soil Testing (L-99)
Fertilizing Shrubs (L-101)
Artificial Soil Mixtures (L-109)
Planting Shrubs (L-111)
Ground Covers (1-121)
Mulching Ornamentals (L-157)
Pruning Overgrown Shrubs (L-207)
Transplanting Seedling Trees (L-300)
Tree Planting Procedures (L-301)
Pruning Shade Trees (C-628)
Dogwood Borers (L-60)
Spacing Plant Material - Trees (L-135)
Transplanting Seedling Trees (L-300)
Tree Planting Procedures (L-301)
Disease-Free Nursery Stock Production (B-728)
The Effect of Soil Aeration and Drainage on the Root Growth of Ornamentals (B-774)
Safe Use of Soil Fumigants (C-710)
Brown Patch and Dollar Spot Disease of Lawns and Turf (L-16)
Diagnosis of Growth Difficulties of Ornamentals (L-74)
Pythium Blight, Leafspots and Rust of Lawns and Turf (L-137)
Minor Lawn Diseases and Problems (L-138)
Chinch Bug Control on Lawns (L-20)
Lace Bugs (L-21)
Bagworms and Their Control (L-22)
Aphids on Ornamental Plants (L-31)
Control of Some Common Pests of Ornamental (L-46)
Dogwood Borers (L-60)
Control Insects and Mites on Roses (L-65)
Camellia Insect Control (L-79)
Mole Crickets and Their Control (L-221)
Weed Control In Lawns (B-678)
Weed Control In Centipedegrass and St. Augustinegrass (B-806)
Weed Control in Lawns (L-96)

Germinating Bedding Plant Seed and Transplanting Seedlings. Athens, GA: VEMC, 1976.

The Greenhouse Climate Control Handbook. Muskogee, OK: Acme Engineering and Manufacturing Corp., 1978.

Greenhouse Gardening. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1981.

Growing Container Plants. San Luis Obispo, CA: Vocational Education Productions, California State Polytechnic University.

Ingels, Jack E., Landscaping: Principles and Practices. Albany, NY: Delmar Publishers, 1978.

Insect Identification Manual. San Luis Obispo, CA: Vocational Education Productions, California State Polytechnic University.

Insects and Diseases of Ornamentals. Clemson, SC: Cooperative Extension Service, Clemson University, 1976.

Introduction to Plant Propagation. Athens, GA: VEMC, 1975.

Landscape Construction. San Luis Obispo, CA: Vocational Education Productions, California State Polytechnic University.

Landscape Design. San Luis Obispo, CA: Vocational Education Productions, California State Polytechnic University.

Landscape Design. University Park, PA: The Pennsylvania State University, 1968.

Landscape Plant Identification. Athens, GA: VEMC, 1977.

Landscape Plant Identification Keys. Athens, GA: VEMC, 1977.

Marketing Agricultural Products. Columbus, OH: Ohio Agricultural Education Curriculum Materials Service, 1976.

McDaniel, Gary L., Ornamental Horticulture. Reston, VA: Reston Publishing Company, 1979.

Nursery Practices. San Luis Obispo, CA: Vocational Education Productions, California State Polytechnic University.

The Nursery Worker, Part I. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1973.

The Nursery Worker, Part II. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1971.

Ohio Curriculum Materials, Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service.
    How Water Moves in Soil, 1979.
    Landscape Drawing Techniques, 1980.
    Lawn Diseases in the Midwest, 1978.
    Lawn Weeds and Their Control, 1979.
    Tips on Growing Bedding Plants, 1976.

Ortho, San Francisco, CA: Chevron Chemical Company.
All About Fertilizers, Soils and Water, 1979.
All About Landscaping, 1980.
All About Lawns, 1979.
Garden Construction Know-How, 1976.
Gardening with Color.
House Plants Indoors/Outdoors.
World of Cactus and Succulents.

Planting Shrubs and Trees. Athens, GA: VEMC, 1980.

Procuring Bedding Plant Seed. Athens, GA: VEMC, 1975.

Procuring Containers for Greenhouse Plants. Athens, GA: VEMC, 1976.

Reily, H. Edward and Shry, Carrol L. Jr., Introductory Horticulture. Albany, NY: Delmar Publishers, 1979.

Retail Floriculture, Book I, Sales, Service and Promotion. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1976.

Richardson, William B. and Moore, Gary E., Working in Horticulture. New York, NY: Gregg Division/McGraw-Hill Book Co., 1980.

Selling and Salemanship for Agricultural Products. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1976.

Sunset, Menlo Park, CA: Lane Publishing Co.
Lawns and Ground Covers.
Pruning Handbook, 1972.

Turfgrass Maintenance. Tallahassee, FL: Career Education Center, 1977.

Turf Management. Columbus, Ohio: Ohio Agricultural Education Curriculum Materials Service, 1973.

Vocational Horticultural Buildings and Equipment. Mobile, AL: Trans Sphere Trading Corporation, 1968.

ADDITIONAL INSTRUCTIONAL RESOURCES

Baumgardt, John Philip, How to Prune Almost Everything. New York, NY: William Morrow and Company, Inc., 1968.

Brady, Nyle, C., The Nature and Properties of Soils (8th ed.). New York, NY: MacMillan Publishing Co., Inc., 1974.

Calkins, Carroll C., Illustrated Guide to Gardening. Pleasantville, NY: The Reader's Digest Association, Inc., 1978.

Davidson, Harold G. and Mechlenburg, Roy, Nursery Management, Administration and Culture. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1981.

Denisen, Ervin L., Principles of Horticulture (2nd ed.). New York, NY: MacMillan Publishing Co., Inc., 1979.

Eckbo, Garrett, The Art of Home Landscaping. New York, NY: McGraw-Hill Book Company, 1956.

The Garden Center Worker. Columbus, OH: Ohio Agricultural Education Curriculum Materials Service, 1971.

Greenhouse Crop Production. University Park, PA: Pennsylvania State University, 1969.

Halfacre, R. Gordon and Shawcroft, Anne R., Carolina Landscape Plants (2nd ed.). Raleigh, NY: Sparks Press, 1975.

Hanan, J. J., Greenhouse Management. New York, NY: Springer-Verlag, 1978.

Hannebaum, L. G., Landscape Operations, Management, Methods and Materials. Reston, VA: Reston Publishing Co., Inc., 1980.

Hartman, H. T. and Kester, D. E., Plant Propagation - Principles and Practices (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall, Inc., 1975.

Nelson, Kennard S., Flower and Plant Production in the Greenhouse (3rd ed.). Danville, IL: The Interstate Printers and Publishers, Inc., 1978.

Nelson, P. V., Greenhouse Operation and Management. Reston, VA: Reston Publishing Co., Inc., 1978.

Nursery Production. University Park, PA: Pennsylvania State University, 1971.

Ortho, All About Pruning. San Francisco, CA: Chevron Chemical Company, 1978.

Ortho, How to Build and Use Greenhouses. San Francisco, CA: Chevron Chemical Company.

Turfgrass Maintenance and Establishment. University Park, PA: Pennsylvania State University, 1968.

Turgeon, A. J. and Giles, Floyd, Turfgrass Management. Reston, VA: Reston Publishing Co., Inc., 1980.

Whitcomb, Carl E., Know It and Grow It. Stillwater, OK: Whitcomb Publications, 1975.

AUDIOVISUALS

AAVIM - American Association for Vocational Instructional Materials	Audiovisual set
Ohio - Ohio Agriculture Education Curriculum Materials Service	Slide sets
Georgia - Vocational Education Materials Center	Slide sets
VEP - Vocational Educational Productions	Sound filmstrips

STUDENT MANUALS

Applying Pesticides. Athens, GA: American Association for Voctional Instructional Materials, 1969.

Landscape Plant Identification. Place Package. Athens, GA: VEMC, 1977.

Pruning. Place Package. Athens, GA: VEMC, 1977.

PERIODICALS

American Nurserymen
310 South Michigan Avenue
Chicago, IL 60604

Grounds Maintenance
P.O. Box 12930
Overland Park, KS 66212

Landscape and Turf
P.O. Drawer 77
Elm Grove, WI 53122

Nursery Business
P.O. Drawer 77
Elm Grove, WI 53122

Weeds, Trees and Turf
9800 Detroit Avenue
Cleveland, OH 44102

SOURCES OF HORTICULTURAL SUPPLIES AND EQUIPMENT

A.M. Leonard, Inc.
6665 Spike Road
Piqua, OH 45356
Horticultural tools and supplies

Amoco Fabrics Company
Patchoque Plymouth Division
550 Interstate North
Atlanta, GA 30099
Shade cloth products

Atlee Burpee Co.
300 Park Ave.
Warminster, PA 18974
Greenhouses

Ben Meadows Company
P.O. Box 80549
3589 Broad Street
Chamblee, GA 30366
Horticultural tools and supplies

Chapin Watermatics
368 N. Colorado Avenue
Watertown, NY 13601
Irrigation Systems

Chicopee
Suite 1950
Peachtree Corners Plaza
Norcross/Atlanta, GA 30071
Shade cloth products

E.C. Geiger
Box 285 Rt. 63
Harleysville, PA 19438
Greenhouse supplies

Florists Products, Inc.
1843 Oakton
Des Plaines, IL 60016
Floral supplies

George J. Ball, Inc.
Box 335
West Chicago, IL 60185
Horticultural seeds

George W. Park Seed Co., Inc.
Wholesale Division
Greenwood, SC 29646
Horticultural seeds

Georgia AG Chemical, Inc.
P.O. Box 1260
Swainsboro, GA 30401
Horticultural chemicals

Jednak Floral Co.
Box 1917
Columbus, OH 43216
Floral supplies

Kolb and Company, Inc.
4505 Mills Place, S. W.
Atlanta, GA 30336

Lawn and Turf, Inc.
1531 Dogwood Dr.
Conyers, GA 30207
Horticultural equipment and chemicals

National Greenhouse Co.
Box 100
Pana, IL 62557
Greenhouses

Northrup King
Horticultural Supplies Dept.
1500 Jackson St., N.E.
Minneapolis, MN 55413
Horticultural Supplies

Plastics Mfg. and Supply Corp.
3205 Perkins Avenue
Cleveland, OH 44114
Greenhouse coverings

Pennington Seed, Inc.
Box 290 Hwy. 278 W.
Madison, GA 30650
Horticultural chemicals and products

Regal Chemical Company
5561 Milltrace Ct.
Dunwoody, GA 30338
Horticultural chemicals

23

Rough Bros.
4229 Spring Grove
Cincinnati, OH 45223
   Greenhouses and greenhouse equipment

O.M. Scott and Sons Co.
333 North Maple St.
Marysville, OH 43040
   Turfgrass products

Southeastern Wood Products, Co.
P.O. Box 113
Griffin, GA 30223
   Woven lathing

Southern Turf Nurseries
P.O. Box 714
Tifton, GA 31794
   Turfgrass

Stephenson Chemical Company
P.O. Box 87188
College Park, GA 30337
   Horticultural chemicals

Stovall and Company
1198 Howell Mill Rd., N.W.
Atlanta, GA 30318
   Horticulture equipment

Sunbelt Seeds, Inc.
2055 Tucker Industrial Rd.
Tucker, GA 30084
   Turfgrass seeds

Vaughn's Seed Co.
5330 Katrine Avenue
Downers Grove, IL 60515
   Horticultural seeds

RESOURCE ADDRESSES

American Association of Nurserymen, Inc.
230 Southern Building
Washington, DC 20005

AAVIM
120 Engineering Center
Athens, GA 30602

Acme Engineering and Manufacturing Corporation
Box 978
Muskogee, OK 74401

Brooklyn Botanic Garden
1000 Washington Avenue
Brooklyn, NY 11225

Career Education Center
Florida State University
Tallahassee, FL 32306

Chevron Chemical Company
Ortho Books
Consumer Products Division
575 Market Street
San Francisco, CA 94105

Cooperative Extension Service
Clemson University
Clemson, SC 29631

Cooperative Extension Service
University of Georgia
College of Agriculture
Athens, GA 30602

Cox Publishing Company
832 South Baldwin Avenue
Arcadia, CA 91006

Delmar Publishers
7625 Empire Drive
Florence, KY 41042

Florida University
Agricultural Experiment Stations
Institute of Food and Agricultural Sciences
Gainesville, FL 32601

George J. Ball, Inc.
Box 335
West Chicago, IL 60185

The Interstate Printers and Publishers, Inc.
19-27 N. Jackson Street
Danville, IL 61832

Lane Publishing Company
Menlo Park, CA 49025

MacMillan Publishing Co., Inc.
866 Third Avenue
New York, NY 10022

McGraw-Hill
P.O. Box 996
Norcross, GA 30091

Merchants Publishing Company
Kalamazoo, MI 49001

Morrow, William and Company, Inc.
105 Madison Avenue
New York, NY 10016

Ohio Agricultural Education
Curriculum Materials Service
Room 254, 2120 Fyffe Road
Ohio State University
Columbus, OH 43210

Pennsylvania State University
Department of Agricultural Education
University Park, PA 16802

Prentice-Hall, Inc.
Box 500
Englewood Cliffs, NJ 07632

Reader's Digest Association, Inc.
Educational Division
Pleasantville, NY 10570

Reston Publishing Co., Inc.
11480 Sunset Hills Rd.
Reston, VA 22090

Sparks Press
900 W. Morgan Street
P.O. Box 26747
Raleigh, NC 27611

Springer-Verlag
175 Fifth Avenue
New York, NY 10010

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236

APPENDIX B

Special Needs

WORKING WITH SPECIAL NEEDS STUDENTS*

Introduction

Special needs population students are those who are designated as handicapped or disadvantaged. The 1976 vocational education amendments define handicapped individuals as:

> Persons who are mentally retarded, hard of hearing, deaf, speech impaired, visually handicapped, seriously emotionally disturbed, orthopedically impaired, health impaired, or persons with other specific disabilities, who by reason thereof require special education and related services and who cannot succeed in the regular vocational education programs.

In those same amendments disadvantaged persons are defined as:

> Persons (other than handicapped persons) who have academic or economic disadvantages and who require special services, assistance or programs in order to enable them to succeed in vocational education programs.

Federal legislation requires that these special needs population students be given an opportunity to function in regular vocational education programs (Essentially, this is what is meant by the term mainstreaming.). This section provides information on how such students are identified and how they can be mainstreamed into regular vocational education environments.

Figure One presents a conceptual model depicting various activities of the process in identifying and mainstreaming special needs students in vocational education. These activities

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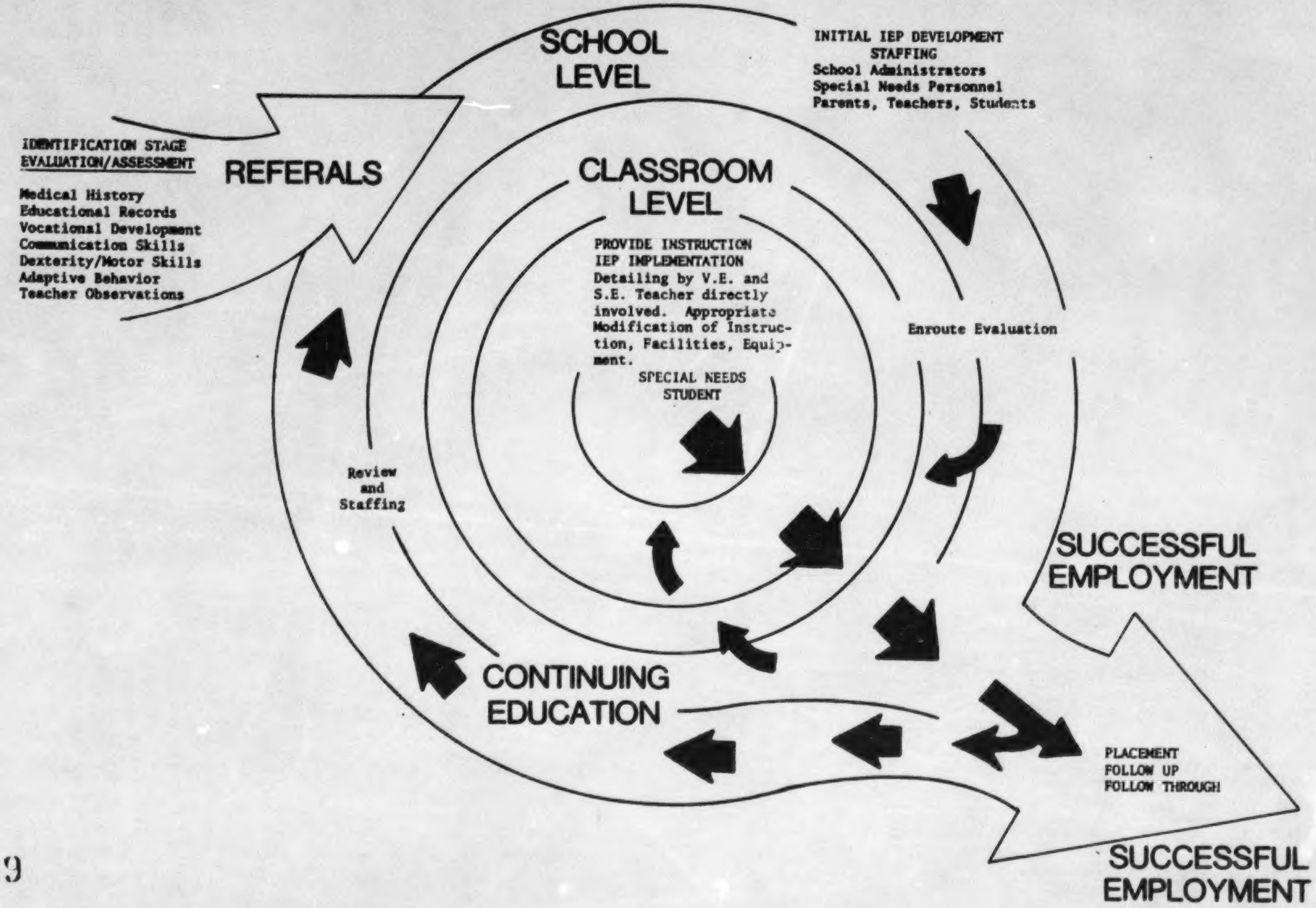
*The project director wishes to thank Mrs. Ann Lary, State Department of Education staff and Mrs. Rhonda Packer, VEMC staff, for their careful review of this section and for their suggestions that improved the overall value of this paper. Appreciation is also extended to Ray Butler for his patient work in reviewing and sorting available resources.

THE CONCEPT OF MAINSTREAMING


SCHOOL LEVEL
INITIAL IEP DEVELOPMENT
STAFFING
School Administrators
Special Needs Personnel
Parents, Teachers, Students
IDENTIFICATION STAGE
EVALUATION/ASSESSMENT
Medical History
Educational Records
Vocational Development
Communication Skills
Dexterity/Motor Skills
Adaptive Behavior
Teacher Observations
REFERALS
CLASSROOM LEVEL
PROVIDE INSTRUCTION
IEP IMPLEMENTATION
Detailing by V.E. and S.E. Teacher directly involved. Appropriate Modification of Instruction, Facilities, Equipment.
SPECIAL NEEDS STUDENT
Enroute Evaluation
Review and Staffing
SUCCESSFUL EMPLOYMENT
CONTINUING EDUCATION
PLACEMENT
FOLLOW UP
FOLLOW THROUGH
SUCCESSFUL EMPLOYMENT

are conducted at three levels: the community level, the school level (Career Development Center) and the classroom level. All three levels must work together if implementation of the process is to be effective.

Identification of the Special Needs Student

Through a variety of pre-testing procedures, special needs students are identified and their potentials are evaluated at the community level. This evaluation process consists of collecting and assessing the following data for each student:

-Medical History
-Educational Records
-Vocational Development
-Communication Skills
-Dexterity/Motor Skills
-Adaptive Behavior
-Teacher Observations

When this procedure has been completed, the community personnel refers the student to the appropriate school level personnel. As a part of the referral and school intake process, an Individualized Educational Plan should be initiated.

> The Individualized Educational Plan (IEP) is exactly what its name implies--a plan for the education of a specific individual. The base content of the IEP is outlined in Public Law 94-142. According to that outline, the IEP must include at least the following information: (a) student's present level of functioning, (b) his/her long range instructional objectives, (c) his/her short-range instructional objectives and finally, (d) some criteria to determine that those objectives have been achieved.

Development of the Individual Education Plan

It would be very difficult to anticipate the exact kind or type of special needs students one might find in a Ornamental Horticulture program at any one time. The terms disadvantaged and handicapped are really "catch-all" terms that indicate a wide assortment of problems that might occur in a student representing one of these populations. In addition to the lack of a specific definition and the fact that the typical vocational instructor has had very little preparation in working with these students, it becomes clear that you will need a basic plan to use in meeting their occupational preparation needs. The following steps can serve as your basic planning procedure for mainstreaming a special needs population student into your curriculum.

The first step occurs after you have been notified that a special needs student can profit from being in your vocational program. When you have received that notification, you should contact your coordinator of student personnel services and ask for a detailed report of the student's assessed status. Note the word assessed; it is critical. Through a formal assessment status, appropriate school personnel and community should have identified the student's strengths and weaknesses as well as the specific handicapping conditions. After you have received the assessment information and understand it you are ready for Step Two.

Step Two, developing (or completing) the vocational aspects of the Individual Education Plan-IEP, is usually performed for handicapped students only; however, it has just as much merit for the disadvantaged. The IEP is a very useful tool. It should be considered the description of what you expect that student to be able to do when he or she completes your course and how you will provide the learning experiences to assure that those expected outcomes will be achieved. Be sure that you keep this IEP in a convenient place and use it.

The IEP is usually developed through group activities called staffings. Staffings may be held as often as needed and can be used to modify the IEP as the student moves through the program. When a student is about to be mainstreamed into your curriculum, you must become involved in the staffing sessions that will develop the vocational aspects of the IEP. IT IS YOUR RIGHT AND YOUR DUTY, therefore, your being present during the staffings is imperative. The special education personnel can present the student's interests, strengths and limitations. However, only you, the vocational instructor, can relate these to your program. This means that the final statement of the job (DOT) and the task level (short term) objectives are primarily defined by you the vocational instructor.

In Step Three the IEP will first be used to suggest how the curriculum and/or the facilities can be modified to accommodate the special needs population student. Modifying the curriculum means that in most cases special adjustments will have to be made in the student materials and that special instructional strategies will need to be developed. When you say modify the curriculum you are not suggesting that the content be "watered down" - you are proposing alternate ways to teach the proper/required content. REMEMBER! ALL VOCATIONAL EDUCATION PROGRAMS ARE BASED ON REAL JOBS THAT HAVE THEIR OWN TASKS AND STANDARDS. AS FAR AS YOU ARE CONCERNED, YOU HAVE NO POWER TO CHANGE THESE. YOU ALSO CANNOT SUCCESSFULLY CREATE A WHOLE NEW JOB.

Modification of facilities and equipment is a concern when working with the phyically handicapped. Be reminded that by law your school building must already meet requirements of accessibility to all handicapped persons--especially those who are blind or are confined to wheelchairs. Your chief concern is to be sure that your classroom and laboratory will allow the handicapped students to be comfortable and above all to learn. You will also need to make certain modifications that will enable handicapped students to properly and safely use the "tools and equipment of the trade". It is foolish to think that you would have a ready answer for all or any particular one of these physical handicaps--call on the experts. Vocational rehabilitation counselors and other staff have been concentrating on these problems for many years. They should be able to offer a number of positive suggestions. A combination of VR experience and instructor creativity can and has produced outstanding results.

As we think about curriculum modification it would help to review some general learning needs of this population.

> The educationally mentally retarded will constitute a major population now entering vocational education. •The key concept to remember in modifying the curriculum for this population is that they require much more detail in order to learn and they require a great deal more practice time. All curriculum modifications for these groups should be made by detailing each task or objective into its smallest parts and by providing for more and more practice.
>
> The hearing and visually impaired can be accommodated by common sense and the use of supporting resource personnel. Neither of these groups reads well or learns from reading as a primary mode. This should be accounted for in modifying the curriculum, i.e., larger print, brail and recordings for the blind and captions on visual materials, seating arrangements, use of notes from a classmate, lower reading level textbooks, oral testing and total communications for the deaf.

The orthopedically handicapped usually require attention to facilities and equipment. Beyond that, their learning needs are as varied as those of the normal population. Remember, some of these individuals will actually be highly gifted in their chosen field. Their major needs will be psychological and coping with the school environment.

The disadvantaged are physically and mentally capable of learning, but their background has not allowed them to fully develop the discipline and cognitive skills (i.e., vocabulary, math, etc.) required to master occupational preparation courses. They have also developed an anti-school attitude that complicate many efforts to modify the curriculum for them. Usually their success in the vocational program is contingent on either a good pre-vocational program or a supporting academic program.

Step Four requires that instructional strategies be selected. These strategies may be many and should be varied. They should reflect the best learning technique for a given student and his or her chosen occupation. Some examples of instructional strategies are discussed below.

Teacher demonstration: Simply show the student how the job is to be done in clear distinct steps.

Peer demonstration: This technique allows the instructor to use one of the advanced students to demonstrate a particular task in a step by step fashion. It is a flexible system. For example, you can use peer demonstration to show each task step while you explain them to the students. When working with the mentally retarded, you will never have enough time to demonstrate a task as often as they may need to see it. In such situations, the well prepared advanced student can perform and explain the same demonstration several times.

Shadowing: Shadowing can be used in conjunction with demonstrations. By shadowing, the student is allowed to do exactly what the demonstrator does. This allows the student to learn in a see and do fashion. The student may shadow the instructor, an advanced peer or in some instances the worker on the job.

Job site visits: Job site visits offer the student an opportunity to see the work being done in its natural location. Students can develop a worker identify a realistic view of how the tools, equipment and materials are brought together to produce the product.

Work group or team: By being a part of a work team, the student can learn the various roles in an occupation as having the opportunity to practice specific sets of skills under the tutelage of peers.

Individualized instruction: Appropriately prepared or adjusted individualized instruction is a big help in managing a class that contains a mixture of special needs population students and "norm group" students. Individualized instruction, no matter what the source, will require much developmental input from the instructor. In most all cases, however, the results are worth the effort.

Media: Many of the special needs populations require mediated instruction (i.e., hearing and visually impaired), however, the use of appropriate media enhances learning for all students. Media can range from a line drawing in an instructional module, to a video tape, to posters and charts. It can be instructor made or commercial. All that matters is that it exactly links to the objective.

Project Method: The value in using projects with special needs population students is that they help them mentally and physically unify all the parts into a uniform whole. Because of the detail required for them to learn, they need learning activities that relate all of the parts to the whole. The development of a product through an assigned project is an ideal integrating experience.

Simulations: Simulations meet a variety of instructional needs. One of the more important with special needs population students is providing the opportunity to develop proper safety concepts before actually working with the "live" equipment that could be dangerous to a careless student.

Role playing: Role playing is a part of several other instructional strategies. On its own, it is a very good procedure for developing the attitudes and values required of a successful worker-i.e., a sense of responsibility, the ability to take orders and follow directions, interpersonal skills and so on. It is a way to concentrate on developing good work habits and positive attitudes.

Peer instruction: Like peer demonstrations, peer instruction is able to multiply the instructor's available time. This allows individual students with specific needs to have more assistance. Peer instruction has values beyond expanding time; it is an excellent approach to learning. In almost every situation, both the peer teacher and the peer student profit from the exchange. In operation peer instruction is simply a matter of preparing and allowing one of the advanced students to teach small groups certain segments of a course.

Team teaching: As we have already noted, some special needs populations require a combination of vocational and special education presented in harmony. A team approach is the only way to meet that need. For team teaching to be effective, clarification of student needs (as defined by the IEP) and careful planning will be required.

Peer apprenticeships: The peer apprenticeship is an ideal way to induct the new special needs population student into the curriculum. By serving as the apprentice to an advanced student, the special needs population student can become climatized to the laboratory/shop and can begin to learn the tools, equipment and materials of the program. The shadow technique can also be added to increase hands-on learning.

Assessment and feedback: Student learning can be improved by frequently assessing students' skills and feeding back their strengths and weaknesses. Through a process of positive feedback, the student can be moved gradually from where he or she is to the level of skill required.

These instructional strategies can be used independently or in various combinations. This brief list is meant only to provide you with some suggestions, there are no doubt many other techniques that could be used. The creative instructor will be constantly innovating to meet the needs of particular students.

Implementing the IEP

Step Five is a matter of putting the vocational aspects of the IEP into operation. The activation of the IEP initiates the student into the vocational education program and allows him or her to progress through the modified curriculum at his or her optium rate. There should be frequent assessment activities that indicate where the student is relative to the IEP objectives. If problems are detected, a staffing should be conducted to re-evaluate the IEP and continue the process in a fashion that is most beneficial to the student.

Step Six will take the student to his or her next logical step of either totally exiting the system or recycling into a continuing education mode. In most cases, the student will do some of both--getting a job and periodically accessing the continuing education component of the educational system to refine existing skills or to broaden his or her capacity.

The ultimate goal of all this effort is not employment-rather it is "successful employment". Successful employment implies that not only is the student placed in a job, but that the student is able to sustain himself or herself in a working environment over an extended period of time.

Evaluation

Evaluation of the student's program is a critical step. Through that process we not only help the current student, but we are able to gather information that will improve our potential to help students with similar difficulties in the future. A well rounded evaluation system should consist of the following activities:

- En-route evaluation (formative) to monitor the student's progress through the program.
- Summative evaluation upon completion of the program to determine job readiness.
- Follow-up after placement to determine if the student is successful on the job.
- Follow-through activities designed to identify any further training needed, which may be indicated by the follow-up procedure.

RESOURCES

In recent years, mainstreaming of special needs population students has been an area of great concern to vocational educators. The overall result of that concern is an abundance of well developed resource materials and a variety of personnel with special skills in working with these groups. In the space allowed by this curriculum guide, it would be impossible to present an adequate set of methods and procedures for solving the problems of students with special needs, but if the vocational eduction administrator and instructor will judiciously use the human and material resources listed here, much of the in-depth information required for the special and unique cases that will occur can be compiled from these sources.

Support Personnel or Systems

As was noted earlier, you the vocational instructor, simply do not have sufficient skills to work with special needs population students alone. There are too many different student problems to ever allow an instructor to deal with them all on a "come as you are" basis. For that reason, you must make yourself aware of the variety of support systems and personnel that are available to you and to the students. A few of these are listed here. These specialists can lead you to others on an as needed basis.

County Health Department - Many of your special needs population students will need some medical and dental assistance. The county health facility is an excellent referral source for these problems.

Special Education - Through local boards of education there are a variety of special education personnel available locally, regionally and from the State Department of Education. The vocational education administrator can obtain assistance from these specialists through the local superintendent's office.

Project SERVE - Project SERVE is a statewide effort to acquire materials and to cultivate expertise in providing vocational education to disadvantaged. Project Serve can be contacted by the area vocational-technical director or the vocational supervisor.

Vocational Rehabilitation - Vocational rehabilitation is a highly developed organization whose major focus is all dimensions (such as: diagnosing, training, job placement and counseling) of the handicapped population. Within that network is a vast pool of expertise. You can contact it through the area vocational rehabilitation counselor who calls on your school or through a designated school official such as the coordinator of student personnel services or Career Development Center personnel.

Office of Student Personnel Services - In the area vocational-technical school, this is the key group as far as students and student needs are concerned. They can provide a variety of services to you and to your students. Many of the contacts with community agencies have already been made by this group-that alone will save the instructor much time.

Career Development Center - Each area vocational-technical school has a Career Development Center designed to meet the very special needs of incoming disadvantaged and handicapped students. The CDC staff is available to assist the instructional staff with a wide range of services for the special needs student populations.

All of the resources and resource personnel listed here are a part of the team. The best results can be obtained by using as many of these people and their support systems as possible from the beginning. In some situations, you will miss a resource in the beginning or the student's needs change. When that occurs do not hesitate to call on the appropriate experts for additional help. As a matter of fact, the rule of thumb that has always been used in the "helping professions" is to go as far as you can, then refer. Do not hesitate to call for help. Most of these service groups are funded to support "your" student. If you do not use them, they fail in their mission and you fail in yours.

Related Materials

Sarkees, M. and Scott, J. *Trade and Industrial Education/Vocational Special Needs*. Alsip, Illinois: American Technical Publishers, 1981.

Mentally Retarded

A Curriculum Guide for Teachers of Educable Mentally Retarded. Danville, Ill.: The Interstate Printers and Publishing Co., Inc.

High, Elizabeth C., and Moyers, Kathy L. *Training Manual: Developing Pre-Vocational/Vocational Skills in Developmentally Disabled Persons*. Washington, D.C.: Job Development Laboratory, George Washington University, 1976.

Kolstoe, Oliver P. *Teaching Educable Mentally Retarded Children*. Holt, Rinehart and Winston, 1976.

Mulligan, Robert E., Gavin, Donald and Conaley, James. *Comprehensive Career Education Curriculum Guide for the Trainable*. New Brunswick, N.J.: Rutgers Vocational-Technical Curriculum Laboratory, 1977.

Introduction to Vocations for Educable Mentally Retarded. New Jersey: New Jersey Department of Education.

State of Ohio Curriculum Guide for Moderately Retarded Learners. Columbus, Ohio: Ohio Department of Education, 1977.

Tucker, Mark M. *Learning through Curriculum Modification: A Blueprint to Teaching the Mentally Retarded*. Johnstown, Pa.: Mafex Associates, Inc., 1976.

Watson, Marjorie. *Mainstreaming the Educable Mentally Retarded*. Washington, D.C., NEA, 1975.

Hearing Impaired

Alvin, Howard P. *The Evolution of an Evaluation Design for Evaluating Secondary Programs for the Deaf in Vocational Occupational-Technical Education (VOTE) Programs*. ERIC ED 123-241.

Guidelines: Educational Planning for the Hearing Handicapped. North Carolina Public Schools. Division for Exceptional Children, North Carolina Department of Public Instruction, Raleigh, N.C., 1977.

Munson, Harold L., Eglston, Judy Cobb and Phillips, Gordon B. *Career Education for Deaf Students: An In-Service Leader's Guide*. University of Rochester, College of

Education, Center for the Study of Helping Services, Rochester, N.Y., 1975.

Nix, Gary W. Mainstreaming Education for Hearing Impaired Children and Youth. Grune and Stratton, 1976.

Visually Impaired

Coker, D.G. The Development of a Vocational Program in a Residential School for the Visually Handicapped. The New Outlook for the Blind, 1974, 68, pp. 25-28.

The Current Status of Prevocational Services for the Deaf-Blind Through the Regional Center Program. Austin, Texas: Management Services Associates, 1976.

Employment Counseling. In: Routh, T.A. Rehabilitation Counseling of the Blind, Springfield, Ill.: Charles C. Thomas, 1970.

Rossi, C., Jr., and Marrotta, M. Breaking Blind Sterotypes. The New Outlook for the Blind, 1974, 68, pp. 29-32.

Ruffino, C.R., and Canterbury, C. E. The Visually Handicapped in the Environment. School Shop, 1978, 37, pp. 70-77.

Tremble, J.T., and Campbell, L.F. A Diversified Cooperative Work-Experience Program for Blind and Multiply Handicapped Blind Students. The New Outlook for the Blind, 1973, 67, pp. 216-220.

Wilson, E.L. Assessing the Readiness of Blind Persons for Vocational Placement. The New Outlook for the Blind, 1974, 68, pp. 57-60.

Orthopedically and Other Health

A Model Plan for a Cooperative Vocational Rehabilitation Program. Office of Human Development, Rehabilitation Services and Welfare, Washington, D.C.

Malliz, Kalisanker and Mueller, Jim. Vocational Aids and Enhanced Productivity of the Severely Disabled. The George Washington University Rehabilitation Research and Training Center, Washington, D.C., 1975.

McCarthy, Henry and Smart, Landon. Recommendations for Enhancing Employment Prospects of Handicapped Individuals. Comps. Human Resources Center, Albertson, L.I., 1978.

Duncan, John, et al. Environmental Modifications for the Visually Impaired: A Handbook. Visual Impairment and Blindness, December 1977, p. 442-455.

Disadvantaged

Guidelines for Methods and Techniques of Teaching Disadvantaged Students. Division of Vocational Education, Virginia Polytechnic Institute and State University, Blacksburg, VA.

A Handbook for Developing Programs and Services for Disadvantaged Students. Department of Vocational Education Studies, College of Education, Southern Illinois, University of Carbondale, Carbondale, Ill.

Knapper, C., Project SERVE. Athens, Ga.: Project SERVE Athens Satallite Center, ND.

Van House, P. and Leatherwood, M. Working with the Disadvantaged Student in Vocational Education. Clarkston, Ga.: Project SERVE DeKalb Satellite Center, ND.

Clowers, M.R., and Stolow, W.C. Handbook of Server Disabilities. Washington, D.C.: U.S. Government Printing Office, 1981.

By Program

Adaption of Home Economics Curricula for Special Needs. North Dakota Research Coordination Unit, State Board of Vocational Education, State Office Building, Bismarck, ND.

Auto Body: An Adaptive and Developmental Program for Special Needs Students. Vocational-Technical Curriculum Laboratory, Rutgers - The State University, New Brunswick, N.J., 1976.

Floriculture. Board of Cooperative Education Services of Nassaw County, Division of Occupational Education, Division of Special Education, Westburg, N.Y., 1975.

Grubb, Francine. Basic Business - A Teacher's Guide to an Employment Orientation Course for Special Needs Students. Vocational Technical Curriculum Laboratory, Rutgers - The State University, New Brunswick, N.J., 1976.

Home Economics and the Exceptional Student: A Handbook for Home Economics Teachers Working with Mentally Retarded Students. Vocational-Technical Curriculum Laboratory, Rutgers - The State University, New Brunswick, N.J., 1976.

Troutman, Carol M. Introduction to Office Occupations. Vocational-Technical Curriculum Laboratory, Rutgers - The State University, New Brunswick, N.J., 1974.

Working with the Handicapped in the Vocational Home Economics Classroom. Division of Vocational Education, State of Ohio, Columbus, Ohio.

Coordinated Vocational Education and Training (C.V.E.T.) manuals for disadvantaged, available from: Oklahoma State Department of Vocational and Technical Education, Curriculum and Instruction Materials Center, 1515 West Sixth Avenue, Stillwater, Oklahoma 74074.

-CVET Construction 3100219 Teacher's Guide
3100209 Student

-CVET General Mechanics 3100219 Teacher's Guide
3100229 Student

General Special Needs

A Handbook for Modifying Vocational Curricula for Handicapped Students. Wisconsin Vocational Studies Center, University of Wisconsin, Madison, May 1980.

Bottoms, J.E. and Scott, C.P. Supportive services for special student groups. In J.E. Wall (ed.), Vocational Education for Special Groups. Sixth Yearbook, Washington, D.C.: American Vocational Association, 1976.

Gill, Douglas H. and Scott, C. Paul. A practical model for mainstreaming handicapped learners in vocational education. The Journal for Vocational Special Needs Education, Vol. 1, No. 3, April, 1979, pp. 3-7.

Gugerty, J., et al. Tools, Equipment and Machinery Adapted for the Vocational Educator and Employment of the Handicapped. Project #498749006, Wisconsin Vocational Studies Center, Madison, Wisconsin, January 1981.

Hull, Marc E., Berry, Owen, J. and Clark, Donald L. Procedures for Teaching Vocational Concepts to Students with Special Needs. Texas A & M University, Final Report Project 62350274, June 1976.

The Related Vocational Instruction Program. Georgia's Approach to Vocational Education for the Handicapped at the Secondary Level, Douglas H. Gill, Project Coordinator, Vocational Programs for the Handicapped, Georgia Southern College, Statesboro, Georgia.

Vocational Educational Resource Materials, A Bibliography of Materials for Handicapped and Special Education. Third edition, 1978. Wisconsin Vocational Studies Center, University of Wisconsin - Madison.

APPENDIX C

Definition of Terms

DEFINITION OF TERMS

1. A/Vs-Audiovisuals - May refer to any picture and/or sound media. (ie. slides, tapes, filmstrips, 16 mm films, etc.)

2. Checkpoint - A student-instructor interface point wherein the instructor may give the student a test, perform a demonstration, or simply provide the student with additional needed information or instructions. Also a checkpoint may be used for motivational purposes.

3. Competency - The ability (knowledge, skills and attitudes) to perform all of a group or cluster of related tasks required to complete a designated activity according to occupational standards. In the educational setting, the statement of a competency includes expected student outcomes in terms of knowledge, skills and attitudes required to complete a designated activity as defined by incumbent workers according to the standards of the work place.

4. Course - A grouping of tasks and competencies which have a common knowledge base or are within a given domain.

5. Criterion-Referenced Measure - An exercise based upon a performance objective, the accomplishment of which measures attainment of that objective.

6. Criterion-Referenced Test - A test designed to measure student competencies based on job or industrial standards.

7. Curriculum Guide - A document containing the objectives, content, organization and structure of an instructional program. It is designed for use by administrators, instructional supervisors and teachers.

8. D.O.T. - Abbreviation for Dictionary of Occupational Titles. Document provides nine digit codes identifying each occupation.

9. Duty - One of the distinct major activities involved in the work performed. A Composition of related tasks.

10. Exit Point - A pre-determined point within an instructional program in which a student may exit with the essential competencies for a specific job. Usually defined in terms of D.O.T. codes and/or O.E. codes.

11. "Hands-On" - Statement implying the student is physically involved in a learning activity.

12. Individualized Instruction (I.I.) - A system of instruction allowing a student to progress at his/her fastest rate.

13. Job - A specific area of specialization within an occupational field consisting of several closely related duties for which a person would expect to receive remuneration. Should be identified by DOT code.

14. Job Sheet - (Or Operations Sheet) - A project of a performance nature. Generally performed by the student in a lab or shop type environment or in a specialized work area.

15. Live Work - Generally refers to items brought into the course area for repair or adjustment. Examples of live work might be automobiles, radios and TV's, air-conditioners, etc. Another form of live work would be patrons visiting the cosmetology department to receive permanents or other services.

16. Master Copies - Original copies of slides, tapes or written materials set aside for the purpose of duplication.

17. Occupational Cluster - A group of occupations sharing a common core of competencies. Georgia's comprehensive high school vocational program is organized around this concept.

18. Occupational Inventory - A listing of tasks to be performed in a particular occupational area, grouped under duty classifications.

19. O.E. - Refers to the U.S. Office of Education. O.E. codes are a classification system (taxonomy) for occupational education programs.

20. Open Entry - Term meaning that a student may enter the program at any time and does not have to wait for quarter or semester breaks.

21. Open Exit - Term meaning that a student may leave a program any time he/she completes occupational objectives.

22. Performance Guide - A series of steps arranged in a sequence which when completed may result in the performance of a task. Also called teaching steps.

23. Performance Objective - A statement in precise, measurable terms of a particular behavior to be exhibited by a learner underspecified conditions. It possesses each of the elements or characteristics specified below:

    a. Condition - The testing situation confronting the learner is clearly specified. This includes equipment provided or withheld, environmental constraints such as temperature, space, etc.

    b. Performance - The specific behavior expected of the learner is stated.

    c. Standard - The degree of acceptable performance is specified.

24. Performance Test - A test entailing not only the ability to answer questions, but measuring the student ability to operate, manipulate or perform a given task.

25. Program - An organized sequence of courses leading to an occupational objective. A program may contain one or more student exit points as defined by D.O.T. codes.

26. Program Objective - The outcome of a prescribed program of instruction. Usually expressed in terms of the occupation or job for which training is designed. D.O.T. codes are frequently used to identify program objectives or student exit points.

27. Self-Paced - Refers to a student moving through the prescribed training program at the fastest pace at which he/she can meaningfully learn.

28. Sequencing - Putting any set or series of learning activities or tasks into proper order or sequence. Normally arranged from simple to complex within groupings or blocks.

29. Software - Written or printed materials, slides, filmstrips, tapes, etc.

30. Student Manual - A document designed for use by students in a specific instructional program. It contains unit sheets, references, operational procedures, job sheets, etc.

31. Task - The smallest division of work in which a measurable output occurs. A logical and necessary step in the performance of a duty.

32. Task List - A listing of tasks performed by incumbent workers within a domain of interest. An example is a listing of all tasks performed by an automotive mechanic or by a worker in ornamental horticulture.

33. Unit - One "module" training material that generally covers one learning task and programmed on one unit sheet. May cover more than one lesson.

34. Unit Guide - A curriculum guide sheet that lists a task and objective with the instructional activities,instructional materials, evaluation and approximate time required for a student to successfully complete the task.

35. V'TECS Catalog - A comprehensive collection of performance objectives, performance guides, criterion-referenced measures and related data. Organized by a job structure or career ladder within a domain of interest.

Federal law prohibits discrimination on the basis of race, color or national origin (Title VI of the Civil Rights Act of 1964); sex (Title IX of the Educational Amendments of 1972 and Title II of the Vocational Education Amendments of 1976); or handicap (Section 504 of the Rehabilitation Act of 1973) in educational programs or activities receiving federal financial assistance.

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